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cover story

NEWS: MACROMEDIA DIRECTOR MX

Macromedia has launched Director MX - a new version of its multimedia authoring software - which it says delivers Mac OS X support, a raft of accessibility features and tight integration with Flash MX - **DIGIT** reveals the new features



reviews



Softimage|XSI

Eyeon Digital Fusion 4.0

Maxon Cinema 4D 8

Amari RX875HT 3D workstation

Max Black Storm 3 3D workstation

Kaydara Motionbuilder 4.0

Logitech MX700 cordless mouse

Corel Ventura 10

HP Compaq N800w mobile workstation

Realsoft 3D 4.5

Scalado ImageZoom 2.0 Professional

TypeMaker Colour Confidence



020



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TWO CD SPECIAL ISSUE...

Cinema 4D 8

Demo of the 3D-modelling powerhouse

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Plus demos of Alias|Wavefront SketchBook, Adobe Streamline, Electric Image Universe 5, a free 140-page Photoshop book, and more...



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Make your 3D art stand out with top tips and techniques

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Professional CRT monitors

Eight 21/22-inch monitors tested and rated in **DIGIT** Labs

DIGIT SEMINAR

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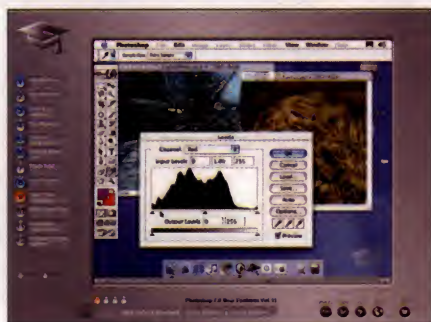
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→ Key features

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Broken CD? Simply return it Helle Jameson at **DIGIT** for a new one! The address is on page 113 of this issue.



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FREE DEMOS & RESOURCES ON CD!

Alias|Wavefront SketchBook

EXCLUSIVE! Try the full-working preview version of Alias SketchBook for Windows, only with DIGIT magazine!

→ SketchBook for Windows

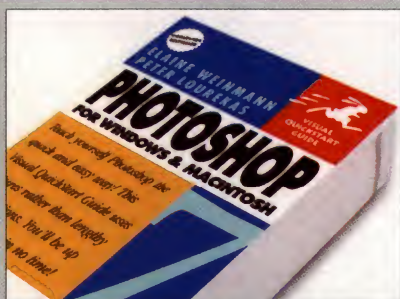
Alias|Wavefront SketchBook is a design and personal productivity tool that transforms a Tablet PC (or ordinary Windows PC) into a digital sketchbook. This preview model of the Pro version allows users to sketch, annotate, and present ideas fast. The image size and file output is limited in this free version. Find out more about SketchBook at www.aliaswavefront.com

→ Key features

- **Natural-media art tools**
Make use of pencils, pens, brushes, and airbrushes to create realistic-looking art sketches.
- **Gesture-based interface for quick selections.**
- **Preview version has a full range of tools and is free to use.**



→ FREE! 140 pages of Photoshop



Photoshop 7 for Windows and Macintosh

Get 140 pages of this great guide to Adobe Photoshop 7 on this issue's CD! It uses task-based lessons to guide users through the software features, and works like a reference book. *Photoshop 7 for Windows and Macintosh - Visual QuickStart Guide* gives users an accessible, how-to reference guide to basic photo-editing, manipulation, optimization, and correction techniques, all updated for version 7. Used as a standard textbook in countless classrooms and as a desktop reference by print and Web graphics professionals everywhere, this is a book that explains Photoshop techniques clearly. On sale for £24.99, this useful reference guide can be yours for free when you start or extend a subscription to **DIGIT** (see page 56).

→ demo software

Cinema 4D 8

www.cinema4d.co.uk

Release 8 of Maxon's high-end 3D modelling and animation application is designed with the goal of making 3D faster, easier and more accessible to users. A new modular concept allows for custom tailoring of Cinema 4D's feature. The software is used to produce broadcast animation, motion-picture special effects, and stunning 3D art.

This trial has limited features from the full version.



Swift 3D 3.0

www.eraim.com

Electric Rain Swift 3D 3.0 is a versatile tool for creating Web 3D animation for use with Macromedia Flash. Through the combination of an easy-to-use interface, a vector exporter and a full ray-tracing rendering engine, Swift 3D enables 3D novices and veterans alike to quickly create high-quality 3D animations. Swift 3D exports to both raster and vector file formats including Macromedia Flash (SWF), AI, EPS, JPEG, GIF, BMP and more.

This is a limited, save-disabled trial.



IMPORTANT NOTE: **DIGIT** magazine makes every effort to test all the demo applications that appear on the CD. Please note that **DIGIT** is not responsible for any loss whatsoever from installing and running any content from these CDs. The individual programs remain the copyright of their owners.

→ demo software

Using the CD



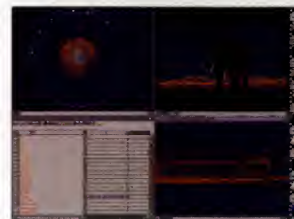
The **DIGIT** cover CD sports an interactive interface that's designed to give an overview of the contents – and you can also use it to view video, browse the gallery, and listen to audio loops. All the applications are located on the CD proper, and cannot be launched from the interface.

Universe 5.0

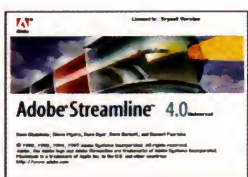
www.electricimage.com

Universe 5.0 is a suite of several high-end applications including Modeler 5.0, Animator 5.0, Camera 5.0, Renderman 5.0, and Radiosity 1.0. This suite of tools allows for the creation of character animations, realistic worlds with 3D matte painting, and sophisticated product concepts.

This trial is save-disabled and has limited functionality.

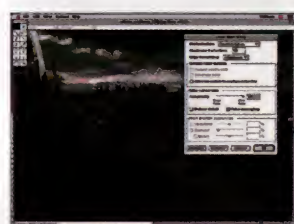


Adobe Streamline 4.0

www.adobe.co.uk

Streamline is a software used for converting rastered images into line art. The software instantly converts scanned B&W or colour raster images into editable Adobe PostScript line art. It takes any scanned image and automatically creates a file that can be used with Adobe Illustrator.

This is a limited, saved-disabled version.



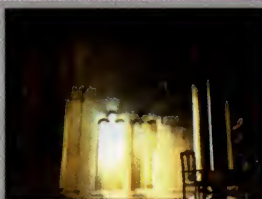
Linker AnimationStand PE

animationstand.com

Animation Stand is a cross-platform tool for professional computer-assisted 2D character animation, compositing and film-quality special effects. The Personal Edition is limited to a 256-x-192 pixel resolution and is aimed at those wishing to learn animation and special effects, or for producing small multimedia and Web animations.



→ creative gallery



View a gallery of images made using models and textures made by Dosch Design. It produces high-quality design products including models, textures, videos and other resources to aid creative professionals.



→ resources

soundoftheweb



FREE audio files from soundoftheweb

Soundoftheweb.com provides 11 new sound effects for your pleasure.

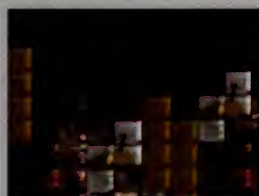
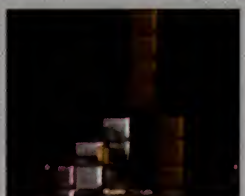
Sound Of The Web is also running a ten per cent discount off audio purchases over £7 or more using its online Soundeffects Shop library.

The Soundeffects Shop can be found by visiting www.soundoftheweb.com

For more info, please email info@soundoftheweb.com

→ showcase: Addictive TV

This short clip is taken from *Pussyfoot*, a ten-minute audio visual mix by Addictive TV and Spacer, and is part of *Mixmasters* – Addictive TV's own ITV1 music series of DJ mixes fused with visuals from leading designers.





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MATTHEW BATH

[Surely, I thought, Contribute was the equivalent of something you find at the bottom of a Cornflake packet – a plastic gonk.]

Preaching to the great unwashed

When Macromedia announced Contribute – an addition to its Web publishing software family – last month, I have to admit to being more than a little sceptical. Surely this £69 Web-design tool was the equivalent of something you find at the bottom of a Cornflake packet; colourful, but ultimately a plastic gonk that is more likely to make you choke over your breakfast.

At first glance, it seemed as if Macromedia had gone all low-end on us, attempting to reach business users at the expense of designers. After all, the reasoning goes, if you give executives anything that looks remotely like a spreadsheet, but is laced with the functionality of something like Dreamweaver MX, then they'll soon be insisting that they have the necessary skills to create sites that would have usually landed on our own, plastic-toy strewn desks.

Yet, Macromedia is actually being a little smarter than this – and it might have a hit on its hands for two reasons. First, Contribute isn't exactly a business-focused Dreamweaver Lite and, second, it knows that when creative software makers target the corporate world, they usually end up flat on their face. Companies such as NetObjects did a similar thing a while back. Once, it had Fusion – one of the highest-profile Web-design packages in the market. Then it decided that business users were a much bigger market. The only trouble is that usually the bigger the target, the more likely you'll miss. The retooled Fusion is still going, but nowhere near its heyday, and designers opted for the more creative Dreamweaver instead.

Not only that, business users aren't the most creative folk, anyway. They may think that having each line of a PowerPoint presentation zoom into view to the sound of Wagner's *Ride Of The Valkyries* is the height of creativity, but true designers will cringe with embarrassment. In fact, this joke – what do you get the business man who has everything? – has only one answer: taste.

Tweak, change, nip, tuck

No, what Contribute does is offload some of the more tedious aspects of Web publishing onto the people who'd normally phone you from the golf course or yacht and demand a colour change. It's aimed at troublesome clients who, not content with a perfectly honed site structure, are apt to withhold invoice payments until you've made a record-breaking amount of revisions, tweaks, alterations, nips, and tucks – and then will still hound you for months afterwards as to why their 400MB catalogue image isn't working well. Client tip: tell them to convert it to 72dpi, and then say that scroll bars are really in at the moment.

Macromedia has the right idea with Contribute. It lets Web teams create the site, lock down parts of it, then hand the site, plus a few copies of Contribute over to the client so they can do their own house keeping. Meanwhile, the Web team can concentrate on other projects without running scared every time the phone rings.

It's something that could work well with other applications – business solutions that remove a lot of the frustration and gritting of teeth when dealing with clients. Desktop-publishing packages could have client versions that let them adjust images and text at the proofing stage, but that have an automatic Taste Alert! dialog box that prevents them from using more than four font faces or an obscure shareware gothic typeface.

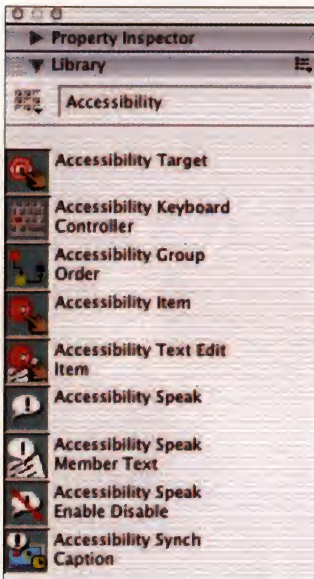
This Taste Alert! warning box could ensure that clients don't use digital cameras to take a picture of the new CEO as a mere dot in the distance, and then somehow expect you to blow it up to billboard size. "Yes, boss," you'd say, "I know the CEO looks like a big, pink pixel at that size, but didn't you notice the Taste Alert! that flashed at you when taking the image?"

Business design tools have their place – usually for creating fancy borders around images of offspring for placing on the CEOs desk. The difference is that designers have a built-in Taste Alert! already.

Reply and comment to dialogbox@digitmag.co.uk

Director MX in Mac OS X move

Macromedia has launched Director MX, which the company says delivers Mac OS X support, a raft of accessibility features, and tight integration with Macromedia Flash MX.



Accessibility to go

New accessibility features can be dropped into Director MX projects, such as the ability to convert text-to-speech.

Macromedia has announced a new version of its Director MX multimedia-authoring software, which makes it easier for customers to create kiosk and training applications that are accessible to end users with disabilities. The upgraded software, which is scheduled to ship this month, meets the US federal government's Section 508 requirements for Web application accessibility.

The new version of Director can be used to create kiosks in museums, airports or government offices that have speech capabilities similar to screen readers for visually and physically impaired users. The software also can be used to create CD and DVDs, online courseware and Web-based applications with built-in speech capabilities.

Brand new Mac

A new feature in the upgrade is support for Mac OS X – the application no longer runs on previous Macintosh operating systems. Macromedia says the application has been rewritten to take advantage of Mac OS X's power and stability. It also runs on Windows.

Macromedia claims the update delivers unprecedented accessibility support – and lets multimedia



New directions for Director

The interface has been revamped to adopt Macromedia's MX interface style used in other tools.

producers create content for visually impaired users, or users who can't move a mouse and need to use alternative pointing devices.

Director MX includes features for adding text-to-speech, captioning, and tab-navigation controls to Web-based Shockwave content or standalone applications for Mac and Windows. Macromedia says this is a particular boon for Mac users, as screen-reading software has limited support on the Macintosh platform.

A Speech Xtra module has been added, which Macromedia says converts text to speech without a screen reader. Voices are provided at the system level by the operating system of the client computer.

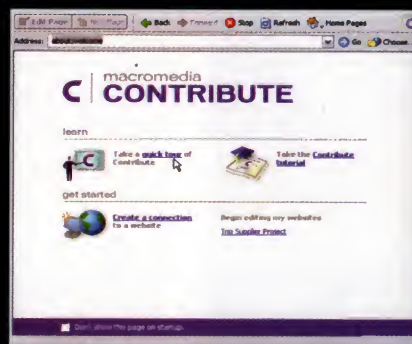
The Speech Xtra is customizable, says Macromedia, and new behaviours add features such as the ability to count the words being read, and updating captioning text automatically. A Keyboard Controller behaviour enables Director MX applications

Macromedia launches Contribute Web-publishing software

Macromedia has launched a Web-design tool that makes it easier for developers to offload the refreshing and editing of Web pages to nontechnical professionals. Called Contribute, it includes administrative controls that Web-site developers can use to delegate authority to make changes to specific types of Web content. Authorized users get a desktop application that lets them update content on the Web pages via an interface that looks like a Web browser.

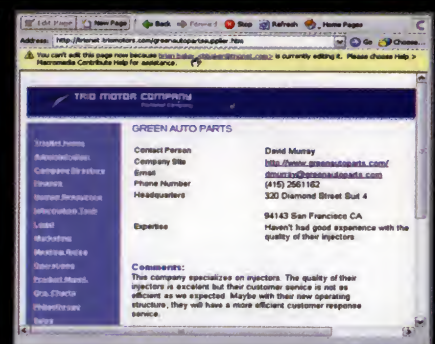
Contribute lets Web developers enforce accessibility requirements through its administrative console. These rules require Web developers to provide alternate text for images and tables so screen readers can explain the content to visually-impaired users.

With Contribute, Macromedia is attempting to attract a new audience – general business users. Macromedia has 2.5 million customers who spend more than 20 hours per week building Web



pages. The company says that its users spend up to 55 per cent of their time making simple Web-content changes that can be offloaded with Contribute.

Contribute works with any HTML Web site, although it has special integration with



the templates used in Web sites designed with Macromedia Dreamweaver. Contribute also features strong integration with Microsoft Office to let content from Word or Excel be easily formatted into HTML. It has an introductory price of £69 plus VAT, and is aimed at Windows users.



Macromedia Director MX adds Mac OS X support

Director MX runs on Mac OS X (top row), while new scripting additions include split-pane editing and debugging of Director MX's Lingo code.

to respond to user keyboard events, while the tabbing order of objects on a screen can be customized with the Group Order behaviour.

Other additions to the upgrade include improved debugging and scripting, a revamped Object Inspector, and support for Apple QuickTime 6. The Object Inspector now has data-browsing capabilities for inspecting properties of, for example, all 3D cast members or Flash MX sprites.

There is now a unified script and debugging window – allowing users to debug, browse, and edit scripts in the same window. A split-pane Message

window allows movies to be executed while Lingo commands – Director's scripting language – are entered and executed in real-time.

Other, scripting updates include colour-coding of recently changed variables, auto formatting, line numbering, auto colouring, and categorized 3D Lingo.

Flash is alive (in Director)

Macromedia says the update has close links to its other MX products, and includes the ability to import Macromedia Flash MX files. Double-clicking on the file launches Flash MX

for instant-editing, with the resaved file automatically reimported into Director.

Lingo control over Flash MX objects features, giving Director users control over all elements used in imported Flash MX content. Direct access to Flash Communication Server MX features, including the ability to access installed video cameras and mics to develop, say, live group video conferencing.

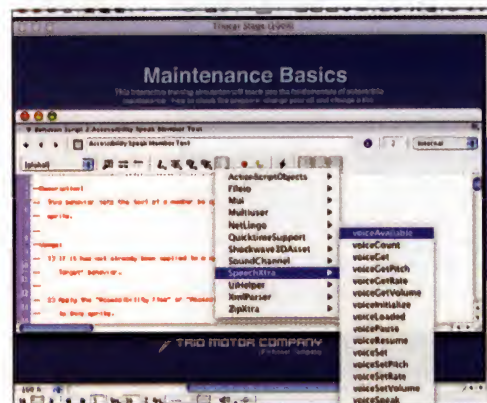
Director MX costs £899 plus VAT, and £299 plus VAT to upgrade from version 8.0 or higher. Educational pricing costs £369.

Macromedia, www.macromedia.co.uk



Classic Director

While Director MX runs on Mac OS X and Windows, projectors to play movies can be created to run on older versions of the Mac OS.



Accessible Lingo

The Speech Xtra means objects can be read within a movie, and Director MX can add Lingo script as a movie is playing.

DESIGN EVENTS

Macworld Expo

Moscone Center, San Francisco
January 7-10, 2003

The professional Macintosh expo where Apple tends to reveal its latest pro kit, and a chance to mix with exhibitors.

Milia 2003

Palais des Festivals, Cannes
February 3-6, 2003

A global meeting place and market for interactive digital content producers – includes exhibition, distribution partner networking, and the exploration of emerging technology for design.

Imagina 2003

Grimaldi Forum, Monaco
February 3-6, 2003

Billed as the international festival for digital images. It features an industry and innovation village aimed at multimedia producers, and the Imagina animation awards.

Visual effects seminars

Wembley, London

February 11-13, 2003

Hosted by **DIGIT** in association with BKSTS – The Moving Image Society, Video Forum, and Corps Business, these seminars held over three days go behind-the-scenes with the latest projects from post-production houses, 3D game makers, and Flash MX content creators. More details on page 86.

ViZFx 2003

Wembley, London

February 11-13, 2003

A brand-new creative exhibition and show for 3D content creators and animators, that promises to be the biggest in the UK. Held alongside VideoForum 2003.

VideoForum 2003

Wembley, London

February 11-13, 2003

Held alongside ViZFx 2003, the UK's biggest video-production show includes exhibition, seminars, hands-on training, and the latest video equipment.

NAB 2003

Sands Center, Las Vegas

April 5-10, 2003

Billed as the biggest exhibition for broadcast, video, and effects producers, NAB features a massive collection of technology for video-editing, effects, Web streaming, HDTV, and more, split over two huge conference centres.

All events and contact details are listed in full at
www.digitmag.co.uk

NEWS IN BRIEF

Mobile multimedia chip revealed
Promising full mobile multimedia, chip maker Alphamosaic has revealed its VideoCore processor that it says will bring high-powered multimedia to mobile devices, such as mobile phones. The company says the VideoCore delivers 50 times the performance of traditional processors on mobile phones when it comes to multimedia playback.

The move could also boost the new generation of camera-equipped mobile phones – Alphamosaic says phones using the VideoCore chip will be able to deliver real-time video and audio and high-quality levels.

Alphamosaic, www.alphamosaic.com

HP prints its way to profit in Q4

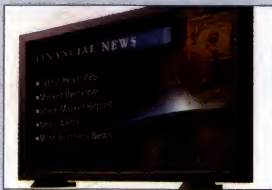
Hewlett-Packard continued to rely on its strong printing and imaging division to keep up the health of its overall business in its fourth fiscal quarter, as its PC, server and storage products again suffered from weak demand. HP posted revenue of \$18 billion (around £11.6 billion) for the fourth quarter, which ended October 31, the company said. This compared to the combined revenue of £11.7 billion from HP and Compaq in the same quarter last year. HP completed its acquisition of Compaq earlier this year. The printing and imaging business churned out £3.6 billion for the fourth quarter, marking a 12 per cent increase year-on-year. HP's personal systems unit, which includes workstations, notebooks and handheld PCs, was down six per cent year-on-year to £3.3 billion.

Plasma screen is set to stun

Eizo took the wraps off two new displays at Comdex, offering a range of screen sizes and formats for designers. The most stunning of the new devices, the FlexScan P5072 plasma display, is a 50-inch monster with a wide-screen 16:9 native aspect ratio. But it doesn't come cheap: The P5072 retails for around £10,000 plus VAT. The P5072 includes a host of high-end features, including support for HDTV and multiple video inputs.

Eizo will release a new 21-inch CRT in the near future. The £800 plus VAT FlexScan T966 will support Epson's Print Image Matching II, a new upgrade to Epson's digital-image colour-management standard.

Eizo, www.eizo.com



'Digital theft' tackled

Heavyweights in the content-creation world – including *Star Wars* film director George Lucas – used the Comdex show in the US to debate digital copyright.

Last month's Comdex trade show, held in the US, saw leading lights in the content-creation field offer their take on the future of digital copyright.

News Corp president Peter Chernin used a keynote speech to paint a dark picture of the technological threat that makes the distribution of high-quality digital copies commonplace.

Media companies suffer billions of pounds in losses each year because of what Chernin called "digital piracy".

The effects of piracy weigh the most heavily on content creators, rather than media conglomerates, and those who see piracy as a way to "screw the suits" have it wrong, he said.

To underscore his point, Chernin invited *Star Wars* creator George Lucas on stage. Lucas implored the audience to consider the consequences of pirating creative material.

Elsewhere, tempers flared in the forum called *Hollywood Versus Silicon Valley*, where Ted Cohen, the vice president of digital development at EMI, was pitted against Richard Stallman, president of the Free Software Foundation.

Speaking in favour of those who share music online, John Perry Barlow, the cofounder of the Electronic Frontier Foundation, argued that the entertainment industry's preoccupation with enforced copyrights threatens creativity. Humans have been making music for thousands of years, Barlow said, but the notion of copyrighting and restricting music has been around for no more than a couple of centuries.

The current system of music distribution is "ill-suited to cyberspace," he said. In addition, the recording industry's efforts to perpetuate the existing system require

more control over the activities of individuals, Barlow said.

The Free Software Foundation's Stallman took an even more radical position, likening file swapping to an act of civil disobedience against the disproportionate power of media conglomerates.

"For the marketplace to do anything meaningful, it must be a free market not one in which media companies control the marketplace," Stallman said.

More sanguine assessments of the state of online music sharing were heard from J Scott Dinsdale, vice president of digital strategy for the Motion Picture Association of America (MPAA), who suggested that media companies are becoming more savvy about the Internet and will soon arrive at a distribution model that is acceptable to Internet users.

Net usage rises

Use of the Internet is booming, and ecommerce is growing at a robust pace, according to figures released by the United Nations.

The number of Internet users worldwide is expected to reach 655 million by the end of 2002, representing 30 per cent growth over the same period last year, according to the figures.

Additionally, the value of goods and services sold over the Internet could reach as high as £1.5 billion this year, a 50 per cent rise from last year, the report said. That number could climb to £2.5 billion at the end of 2003.

The report estimates that around 18 per cent of purchasing by firms and individuals could be done over the Web by 2006.

ViewSonic eyes wireless displays

The future of design is wireless says display-maker ViewSonic, which has released specifications for a new class of wireless computer displays running a custom operating system from Microsoft that will allow users to walk away from their desks and still have access to data on their PCs.

ViewSonic will release two wireless displays in the first half of 2003, according to David Feldman, senior product manager at ViewSonic. The ViewSonic V110 will be a 10-inch monitor and is priced at around £700. A second, 15-inch version called the ViewSonic V150 (pictured) will cost around £900, Feldman said.

Both displays use built-in

support for the IEEE 802.11b wireless LAN technology, also known as WiFi. A stylus pen will be able to navigate the touch-screen displays.

Each device from ViewSonic will run on a 400MHz XScale processor from Intel and include a rechargeable battery pack that is designed to power a device for four hours, ViewSonic said. Each device also will include a built-in microphone, headphone jack, and one USB port.

One downside is that users will not be able to use the first-generation of devices to watch or edit video from

a PC, according to Microsoft. That's because big video files cannot be sent over WiFi.

ViewSonic, www.viewsonic.com



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Thanks to an equivalent focal range of 35–280mm (yes, 280mm), our latest generation Coolpix goes to even greater lengths to bring you breakthrough technology in compact form. 5700 by name, this is Coolpix and then some. You think we exaggerate? Just wait till you see the detail and clarity its 5-million pixel resolution gives you. To say nothing of the Nikkor lens whose 2xED glass elements keep chromatic aberration to an absolute minimum. For the full picture, check out the data feature by feature. Chances are, the more you know about the 5700, the closer you'll be to buying one.

1 Powerful 8x optical zoom lens with two ED lens elements enables a focal range of 8.9–71.2mm (35–280mm in 35mm equivalent).

2 5.0 effective megapixel resolution produces incredible image sharpness and detail.

3 Magnesium alloy SLR-type body, not only the smallest but also the lightest in the 5-megapixel sector,

thereby offering more refined feel and ergonomics.

4 RAW image data recording mode, a feature commonly found in professional Digital SLRs, enabling post-processing on a computer to achieve optimal results.

5 Electronic viewfinder ensures bright, accurate through-the-lens frame coverage.

6 Clear and bright vari-angle LCD shows images and allows for shooting in virtually any position.

7 Comprehensive range of exclusive accessories, including a wide angle and a telephoto converter as well as a remote cord release.

8 Versatile exposure modes available: Programmed Auto, Shutter Priority, Aperture Priority and

Manual meet an extensive range of creative control requirements.

9 Standard 32mb CompactFlash Type I card (supplied) means many images can be stored. However, for ultimate storage, the 5700 will accept larger Type II memory cards including Microdrives.™

10 Hotshoe accessory compatible with 10 Nikon speedlights.



All details correct as of July 2002.

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NEWS IN BRIEF

Xbox losses at £177m for Q1

Microsoft for the first time last month provided financial results for each of seven recently formed business units, revealing operating losses in four segments, including the unit that produces its Xbox video-game console.

In a regulatory filing, Microsoft said its home and entertainment division, which includes its Xbox video-game products, incurred operating losses of £114 million in its first fiscal quarter, ended September 30, on £324 million in revenue. Microsoft launched its Xbox in November 2001. It competes with machines from Sony and Nintendo.

Like other game makers, Microsoft expects to generate its biggest profits in gaming from the sale of gaming software, rather than from the consoles, Brent Williams, a software analyst at McDonald Investments said. The strategy is to sell as many Xboxes as possible even if profit margins are thin, then sit back and wait for customers to buy the games. Microsoft, www.microsoft.co.uk

Serving for a graphics match

Adobe is shipping the Adobe Graphics Server 2 – a update to its graphics and imaging server software. Adobe Graphics Server 2 adds support for network publishing workflow, says Adobe, and is aimed at users looking to create, repurpose, and update high-quality images used in a variety of mediums.

Adobe says users can deploy GoLive, Photoshop, and Illustrator to create new templates that are automatically updated by Graphics Server.

New features include support for PDF, EPS, conversion for SVG to PDF, CMYK image manipulation, and clipping-path support. It costs around £4,800 per seat. Microsoft, www.microsoft.co.uk

Plug into After Effects

The Plugin Site has released a collection of 21 plug-ins for Adobe After Effects. Called Plugin Galaxy for AE 1.5, it contains 150 animatable video effects that work with any After-Effects compatible application. The new collection adds 18 filters and a page curl plug-in to its previous release, with new effects including Jungle Edge, Dragon's Tail, Butterfly, and Erode. It costs around £65 plus VAT.

The Plugin Site, <http://pluggingalaxy.com>



NVidia's 'cinematic 3D'

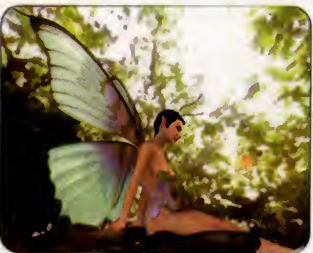
The GeForceFX graphics chip is set to redefine 3D graphics, says maker NVidia, with it able to deliver near-movie-quality 3D graphics in real-time. And this is a 'low-end' chip...

Nvidia has announced the GeForceFX, a 500MHz graphics chip the company says will render near-movie-quality real-time 3D. New boards shipping in January based on the GeForceFX will sport 1GHz speeds and DDR2 memory.

NVidia showed off the GeForceFX at Comdex last month, including an emoting 3D fairy (right). The company says the GeForceFX's pixel instruction capabilities, which determine how many effects it can pack into a single pixel, allow for life-like hair and skin, as well as advanced lighting effects.

Game developers showed off their work with the GeForceFX. Electronic Arts displayed a scene from the company's upcoming *Command & Conquer: Generals* (above). The demo culminated in a nuclear explosion full of impressive special effects.

Just as noteworthy as the physical specifications of the GeForceFX is the software architecture it supports. Based on NVidia's CineFX architecture and supporting NVidia's graphics language – Cg – company executives say the new graphics processing unit will let game developers create graphics that rival those in motion pictures. UK pricing is not yet available.



AMD: film, digital arts highlight promise of 64-bits

Advanced Micro Devices president and CEO Hector Ruiz used his Comdex keynote address in Las Vegas last month to demonstrate what 64-bit technology can accomplish for the creative industry. Several companies discussed their commitment to current and future 64-bit technologies using Athlon processors, including NVidia and JAK Films.

The speech featured demos of workstations using the desktop version of the 64-bit Hammer technology, which is now called Athlon 64, Ruiz said.

JAK Films, the production company founded by *Star Wars*

creator George Lucas, showed how 64-bit technology improves previsualization techniques, and Nvidia used the newly christened Athlon 64 and its new GeForceFX chip to render a video of a highly-detailed shapely fairy (see story above).

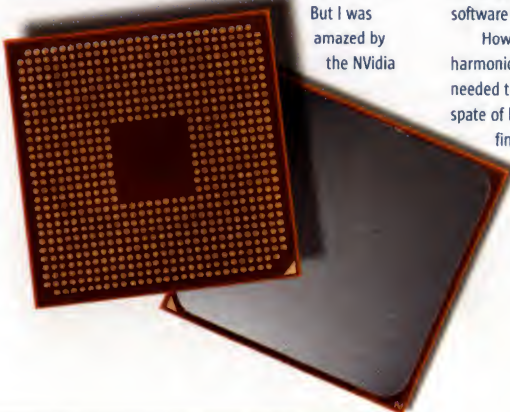
"I was sceptical when I came in: why talk about 64-bit? But I was amazed by the NVidia

rendering; that's great stuff," said J C Dornig, who attended the speech, and works at Ascendlink. "Suddenly you see the difference technology makes," he said.

A number of companies have announced their support for AMD's 64-bit processors. Red Hat announced it will offer a version of the popular and free Apache Web server software for the processors.

However, AMD's financial situation is less harmonious. Analysts have said that AMD needed to not only cut costs through a recent spate of layoffs, but it needs to seek additional financing to assure it remains afloat through 2003.

AMD, www.amd.com



NEWS IN BRIEF

Hip not to be Square

Enix and Square are to merge operations and form Square Enix, a brand-new company created to compete in the world marketplace on the same level as America and Europe's large third-party games developers. The two companies plan to complete the merger by April 1, 2003; their aim is to build a new firm that will produce \$656 million in yearly sales and \$123 million in profit by fiscal 2005.

Both Square and Enix are large Japanese companies having difficulty competing with EA, Activision, Infogrames and other software giants. Square returned to profit in the last half-year after taking a hit from the failed *Final Fantasy* movie, but still faces losses in operational profit from the lack of a major hit in 2002.

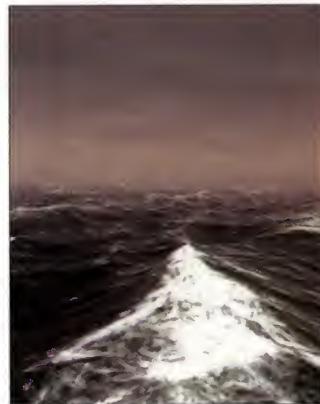
Maxell DVD in the house

Maxell has revealed a host of new DVD media, and promising such advances as smaller and double-sided DVD-R discs, plus discs suited to today's faster drives. But most of the promises won't be fulfilled this year. Maxell hopes to ship its new 4x DVD-R and 2x DVD-RW media in February. The 4x discs will support a transfer rate of about 5.5MBps, and the 2x discs, about 2.8MBps. But the new media will have some compatibility problems. For example, it's likely that DVD drives and DVD players manufactured before this autumn won't be able to read 4x DVD-Rs, acknowledges Rich Gadowski, a Maxell representative.

Softimage adds Parhelia bite

Softimage has revealed that it has added support for the Matrox Parhelia triple-head graphics card to its 3D application, XSI 3.0. The company says the move allows XSI to be used over three computer monitors, providing valuable on-screen real estate. Softimage says that XSI's user-interface can be configured for the three-screen set-up.

The company has also released a sample real-time shader, available as a free download, that works with XSI and the Parhelia card. Softimage says the shader delivers a TV-out shader that supports live-video output directly from the camera views of XSI. Material can then be sent directly to tape or a video display, according to Softimage. Softimage, www.softimage.com



Alias|Wavefront ships Maya PLE 4.5

The free, non-commercial version of Alias|Wavefront Maya has been updated to version 4.5, according to the company. Alias says the first release of the software, Maya 4 Personal Learning Edition (PLE), has been downloaded a quarter of a million times since February 2002.

Maya 4.5 PLE sports new features from the full commercial release, plus user-requested changes, improved user interface, and a multi-lingual guide.

Key to the improvements is that the watermark is no longer visible when working in wireframe mode, says Alias, and it's now possible to import different data types, including files from the commercial version of Maya.

New modelling tools found in Maya 4.5 Complete are included, according to the company. User interface and workflow enhancements are included, as well as integrated 3D painting tools.

The company says the release, which works for Mac OS X and

Windows, is aimed at creative users who have never tried 3D, as well as 3D professionals looking to expand their application knowledge.

A Web-based resource centre gives full access to video tutorials, discussion forums, and content sharing exchanges. There is also a gallery where users can exhibit their work.

Maya PLE 4.5 will be available for free download from January 2003, or brought on CD for £14.49 from Alias. Alias, www.aliaswavefront.com/mayaple

Digital-imaging standard touted

A group of six digital-still camera makers and printer vendors, including Sony and Hewlett-Packard (HP), have jointly proposed an industry standard that allows images recorded by a digital-still camera to be printed without using a computer.

The DPS standard – which is a name, not an acronym – is being proposed by Canon, Sony, HP, Fuji Photo Film, Olympus, and Epson.

Previously, each manufacturer used a proprietary method for printing pictures directly from their digital-still

camera, making it difficult for users to mix equipment from different vendors.

The first version of the standard is expected to be released by February, said a Canon representative.

The standard has been designed for scalability and simplicity, using the same interface for all cameras. After a USB cable is connected between a camera and a printer, the user chooses an image on the cameras' LCD monitor. By simply pressing a button on the camera, a printer responds and prints the image.

DIGIT preps visual-effects seminar

Fancy the chance of seeing how the UK's top post-production houses, visual-effects studios, and 3D games designers create their blockbusters? Well, now you can. In an unprecedented move, **DIGIT** has teamed up with BKSTS – The Moving Image Society – to deliver three-days of visual-effects and content creation seminars at Video Forum on February 11-13, 2003.

Each seminar is a masterclass run by leading professionals in the above

fields, and topics include using packages such as Photoshop and After Effects to create awesome broadcast effects; creating PlayStation 2 games from movie tie-ins; and taking video onto the Web with Flash MX.

UK training company Corps Business will be on hand to offer tailored tricks and tips for creatives. Each session costs £49.99 per person, and you can book your place now at www.digitmag.co.uk/vfxseminars

Studio PLE here

Alias|Wavefront has released a free, non-commercial version of its Alias Studio software, which is aimed at CAD users, digital designers, and industrial-design professionals, according to the company.

Called Studio Personal Learning Edition, it is available for Windows, and features full access to Studio's 2D sketching technology, NURBS curve and surface-modelling tools, and photorealistic rendering tools.

Alias says the software can be ordered from its Web site for a \$10 handling charge, and the site will provide free access to learning materials, discussion forums, and free sample files.

Studio PLE will display a watermark on images, and uses a special, non-commercial file format that allows import of native Studio data and DXF files.

More information is at: www.aliaswavefront.com/studiople

Laptops of the gods

Mobile computers are set to hit 12GHz, boast huge displays, and deliver high-speed graphics. Could the future of creativity be on a laptop computer?

Laptop computers – once the mainstay of executives – are moving into the creative arena, with future developments geared to merging mobility and creativity over the next five years, predict industry observers.

Notebook processors will double in power every two years – reaching a whopping 12GHz in five years, laptop experts told **DIGIT**. Disks will shrink and may be replaced by solid-state memory. Displays will grow clearer, brighter and more energy-efficient, and may even unfold to desktop size.

And all this is great news for designers working in graphics, 3D, and video that want to go mobile.

There is a downside, though: while the efficiency of batteries will improve, it won't be enough to keep up with power-hungry applications such as multimedia creation and viewing tools.

Pavement processors

For more than three decades, the power of microprocessors has doubled every 18 to 24 months, and most observers expect that to continue for another ten years or so. Similar progress is being made in other

functions in silicon, such as graphics processing.

Some portables will have the full power of desktop machines, but most mobile units will use processors such as Intel's new Bantian chip. Released next year, Bantian is Intel's first chip designed specifically for mobile computers. It will have a little less power than other Intel chips, but will run cooler, and won't drain batteries as quickly.

Not Intel inside

But Intel won't have a monopoly on power-efficient chips. Transmeta claims that its Crusoe processor consumes up to 70 per cent less power and runs cooler than its Intel x86 equivalent. Meanwhile, Apple is pushing its G4 processors, currently running at 1GHz in its PowerBooks. While Apple and its chip supplier, Motorola, won't reveal future plans, industry experts say a move by Apple to either IBM RISC processors or even an AMD-powered HyperTransport motherboard could well surface in up-coming PowerBooks.

Brian Connors, the chief technology officer in IBM's personal computing division, says the big advancement in displays during the next three to five years will be the emergence of organic

LEDs (OLED). OLED screens will be lighter, brighter, and will consume less power than today's displays, he says. They will also be thin and flexible – even foldable.

But Connors refuses to predict a time as to when we will reach his personal Nirvana – electronic newspapers.

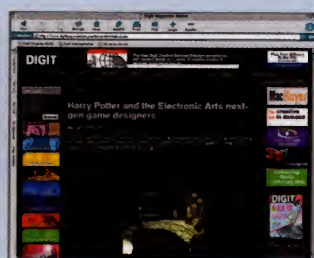
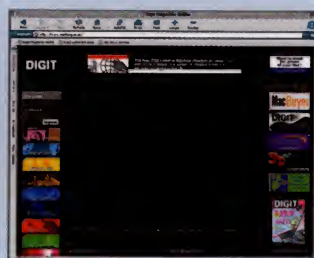
The organic chemicals in OLED displays emit their own light when electrically charged and don't rely on backlighting, which adds weight, cost, and thickness to the screen. There is also research to develop materials to replace the heavy, inflexible glass substrate in displays. Such materials will begin to be used in about four years, predicts Matthew Wagner, product marketing manager at Hewlett-Packard.

Mike Stinson, vice president of mobile products at Gateway, says notebook screens for the occasionally



DIGIT Online revamps forums, adds subscriber-only sections

Get access to over 265 reviews, 2,400 news stories, 54 projects, updated buyer's guide, over 500 tips, and more



DIGIT Online – the Web site for **DIGIT** magazine – has been revamped, offering a brand new forum design, plus the introduction of premium sections for subscribers. The move means that much of the hundreds of researched, in-depth articles, reviews, and features are accessible only to magazine subscribers, or those that subscribe online for a low fee of just £1.67 per month.

"We've thought long and hard about how best to take **DIGIT Online** forward and ensure that it remains a viable service that delivers more, free news than any other creative Web site in the UK," said **DIGIT** editor Matthew Bath. "The addition of premium areas adds value for loyal magazine and online subscribers, while we're still committed to publishing the latest news for free for all."

The low subscription rate means readers can gain access to thousands of pages of the leading creative content for just £10 per year. **DIGIT** magazine subscribers get this additional content as part of their subscription – making it even better value for money. News and other sections will remain free.

DIGIT Online, www.digitmag.co.uk



mobile user could grow to 17-inch. "It will be a desktop replacement for people who want a notebook because it takes up less space," he says.

Disk and memory

"The disk-drive trend is one you can always count on – real density doubles every year," says HP's Wagner. Even so, it will be at least 2005 before new storage technology affects notebook design, he says. Then disk storage might begin to give way to always-on nonvolatile RAM (NV-RAM). "NV-RAM will be the big new story in notebooks, first as a disk-augmentation technology providing caching and improved performance," Wagner says.

Double Data Rate Synchronous Dynamic RAM (DDR SDRAM) will also become commonplace, according to Wagner. It will improve system performance by speeding data transfer between CPU and memory so that

memory doesn't become a bottleneck as CPU power soars.

Indeed, IBM has extended DDR SDRAM technology in its experimental DDR2 SDRAM, which is expected to increase memory bandwidth to a whopping 6.4Gbps in notebooks that ship late in 2005.

Gartner's Fiering says that Universal Serial Bus (USB) 2.0, which can transfer data at 480Mbps, will spell the end of the three-spindle notebook; the next version of FireWire will make mobile video capture and editing faster.

"We'll see hard drives go from 2.5 inches to 1.8 inches," says Brian Zucker, technology evangelist at Dell. "For the higher-end notebooks, we'll use that extra space to improve, for example, the audio subsystem. For others, we'll just take that extra space out and make them smaller."

In two to three years, 85 per cent of notebooks will come with built-in chips

to support one or more versions of industry standard 802.11, or WiFi, wireless LANs.

Intel's Banias mobile processor will integrate the 802.11b (11Mbps) and 802.11a (54Mbps) wireless LAN standards into the microprocessor, says Anand Chandrasekher, vice president of Intel's mobile platforms group. Apple is widely expected to include Bluetooth technology in its next PowerBook update.

Fuel for thought

However, don't expect to find an exotic power source such as fuel cells in your notebook anytime soon. Despite the hype about cells' ability to power notebooks longer than the four hours provided by the lithium ion batteries, manufacturers plan to stick with batteries. Experts say that fuel cell manufacturers can't deliver them at a price equal to that of today's batteries.

NEWS IN BRIEF

Xbox online trial hits Europe

Xbox gamers with a broadband Internet connection in the UK, France and Germany have been able to join the Xbox Live Test Drive trial from late November, Microsoft has revealed. Gamers can get up to three-and-a-half months of free play by buying a Test Drive starter pack online between November 30 and February 13, 2003.

The pack includes a 12-month subscription to the Live service, but the subscription does not begin until March 13. The service will be free until that date, Microsoft said. The trial follows a successful beta test for the service and will be Europe's largest-ever online gaming trial, according to Microsoft. The UK Xbox Live online gaming service is offered with BTopenworld, and rival UK service provider, NTL. Microsoft, www.microsoft.co.uk

Hitachi releases tiny MMC card

Hitachi has unveiled a smaller multimedia card aimed at mobile devices such as digital-still cameras and PDAs. The RS-MMC (Reduced-Size MultiMedia Card) is a half-in-length version of a standard MMC, measuring 24-x-18-x-1.4mm and weighing 0.8g. The RS-MMC, which has seven pins, can be used in the same slot as an MMC. Like a standard MMC, an RS-MMC can be also plugged into the SD (secure digital) card's slot when using an adaptor, said Chieko Yoda, a Hitachi spokeswoman.

The SD card is a secured version of MMC, which was first introduced in 2000. About 500 companies now support the SD card standard. An MMC or an RS-MMC can be put into an SD card slot, and unsecured data can be transferred to it, Yoda said. A 16MB, a 32MB, and a 64MB card are available from Hitachi. The prices are expected to be around the same as, or slightly higher than the standard MMC. A 64MB standard MMC is currently sold for around £28.

Hitachi, www.hitachi.co.uk

Adobe sued over Healing Brush

Photoshop maker Adobe has been sued by a company alleging that Photoshop's Healing Brush tool is in breach of contract and uses misappropriated trade secrets. Shell & Slate, which filed suit against Adobe, is run by Ben Weiss, who worked with Kia Krause to develop the graphics engine used in Kai's Power Tools, which is now owned by Corel.

The Healing Brush tool paints over part of an image with a sample taken from another part, but matches the painted area with a similar shading and tone. No further details were forthcoming from either company.

MPEG-4 (finally) given a licence to Web stream

The key licence for use of the MPEG-4 digital compression standard is now available, MPEG LA, a group of MPEG-4 patent holders, has revealed. The release ends a dispute around licensing for MPEG-4 that earlier this year led Apple to delay the release of its QuickTime 6, which uses MPEG-4. The final MPEG-4 Visual Patent Portfolio Licence, which sets fees for use of MPEG-4 encoders and decoders on devices including PCs is based on an update issued in July.

Most important in the licence are caps to provide predictable costs and user-threshold levels to minimize impact on lower-volume manufacturers and encourage early stage adoption, say experts.

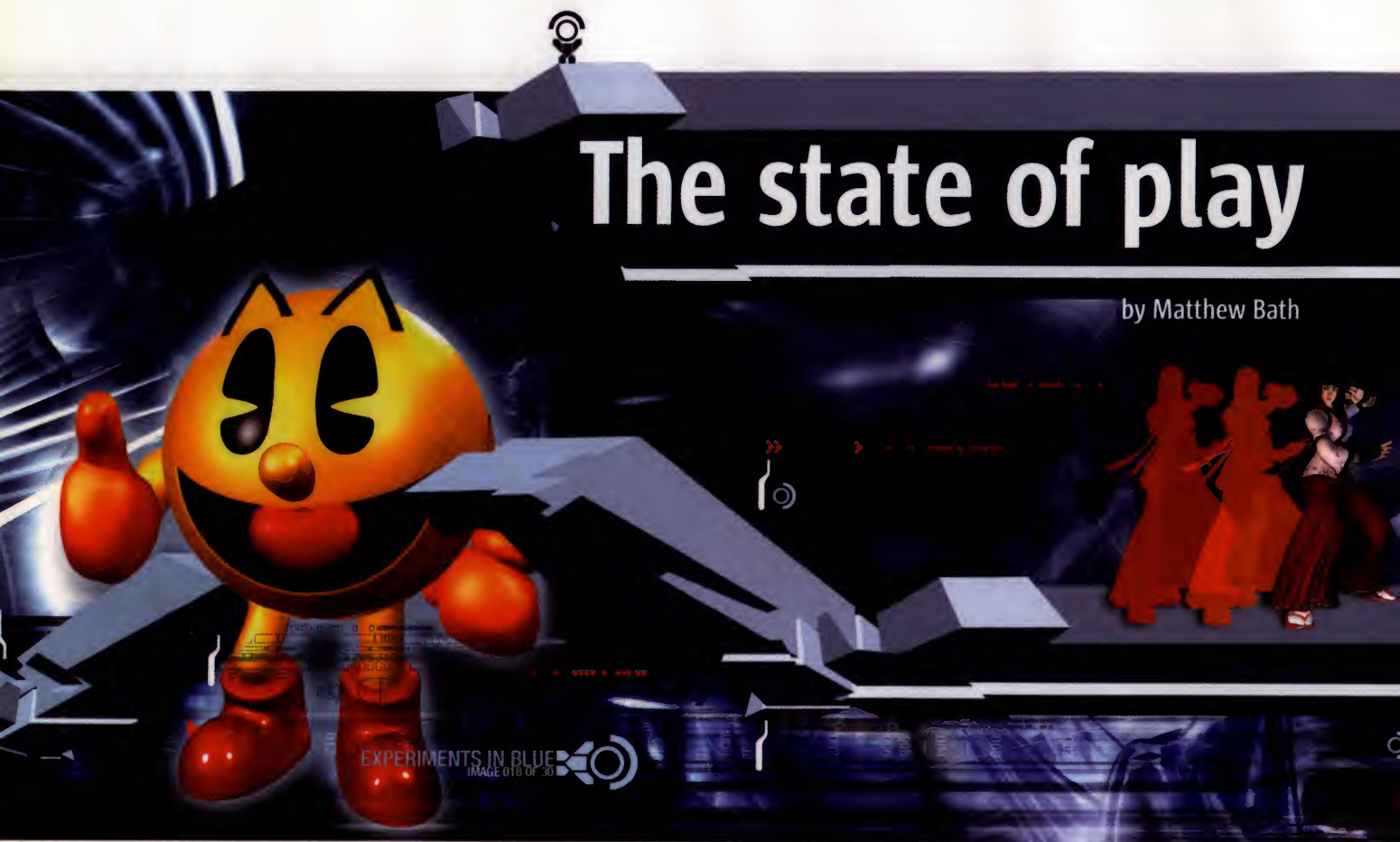
Under the licensing terms, a provider of MPEG-4 video on the Internet or to mobile users that benefits commercially from the technology can choose to pay \$0.25 per subscriber per year or \$0.02 per hour of MPEG-4 video used, each subject to an annual cap of \$1 million. No royalty is payable for the first 50,000 subscribers to a service per year.



Software companies, which make the MPEG-4 decoders and encoders, pay \$0.25 per encoder and \$0.25 per decoder sold, with a cap of \$1 million on each and no royalties on the first 50,000 encoders and decoders sold per year, according to the MPEG LA.

The state of play

by Matthew Bath



Gaming analysts are lining up to trumpet the collapse of game design and development for PCs and consoles – yet a recent DTI report finds that the UK game-design industry is one of the most vibrant in the world. So, what's the real state of play for games creation in the UK?

For many 3D artists, designing and developing games, characters, and settings for next-generation consoles such as Microsoft's Xbox, Sony's PlayStation 2, and Nintendo's GameCube, represents the pinnacle of desirability. The industry

kudos, creative environment, and use of cutting-edge technology and animation skills means the game-design industry is a siren call for budding 3D designers everywhere.

Yet a report in **DIGIT** last issue where games-development studio

heads worldwide predicted a massive slowdown in the industry, and financial analysts cited a surge in development costs as the catalyst for the end game of the industry's golden age, would have given chills to anyone connected with games design.

So what's the real score with games creation in the UK? The answer may lie with the DTI (Department of Trade and Industry), which has published a report – *From Exuberant Youth To Sustainable Maturity: Competitiveness Analysis Of The UK Games Software Sector* – that tackles this issue. Reassuringly, it finds that the UK is the third largest market in the world for games consumption and development. However, it does raise serious questions as to the future of games development in the UK.

so surprisingly is the finding that the US is the largest market for games software expenditure (£4.5 billion), with Europe second (£4.1 billion) and Japan third (£2.4 billion).

While many industry watchers see Japan as the cultural home of computer gaming, it's actually smaller in size to Europe. However, Europe is often treated as a secondary market behind the US and Japan due to its lack of homogeneity, plus added costs incurred by publishers for localization – making it more complex and costly to sell into.

The UK is Europe's largest market, according to the report, with £0.93 billion sales, and 26 per cent of the European games market. This is equal to 8.7 per cent of the worldwide market. Console games represent 60 per cent of UK games sales.

The biggest drive for the explosion in games software lies with the fact that games consoles are beginning to attain mass-market levels of penetration – with 150 million consoles in circulation worldwide in June 2002. The increased competition and price wars between the three console makers

UK independent and in-house developers

Independent	UK staff	Publisher in-house	UK staff
Argonaut	240	Infogrames	300
Climax	225	Codemasters	250
Rare	180	Rage	200
Warthog	150	Electronic Arts	350
Blitz	140	Take 2	100
Silicon Dreams	105	Empire	100
Vis	100	Eidos	130
Runecraft	100	Acclaim	75
Kuju	100	Sony	70
Hotgen	100		
Eurocom	80		
Rebellion	80		
Elixir Studios	60		
Criterion	45		
Lionhead	25		

Source: DTI

Going global

Perhaps the biggest surprise is the size of the global leisure software industry – estimated at around £13 billion according to the report – with games software racking up around £10 billion of that. More than revenues generated by the Hollywood movie factory. Not

– Sony, Microsoft, and Nintendo – are adding to the buoyancy of the market.

Microsoft has slashed the price of its Xbox console twice since launch, from £299 to its current £159. Sony has reduced the price of PlayStation 2 to £169, and Nintendo's GameCube was cut to £129 before it launched.

Ironically, the lower pricing may speed up the delivery of a new generation of games consoles, with the report citing interviewees from the games industry as predicting that Microsoft will release a more frequent, incrementally updated Xbox than the traditional five-year cycle.

The report found that in PAL regions, Sony dominated the market with 34.6 million PlayStation 2s and 7.6 million PlayStation 1s. Nintendo was a clear second with 7.6 million Nintendo 64 consoles, and 450,000 GameCubes sold. Microsoft was third with 450,000 Xbox units shifted by June 2002.

The UK games creation industry has often been criticized as hitting above its weight – it accounts for 8.7 per

cent of games consumed worldwide, yet UK-developed games account for a whopping 15.5 per cent of global sales. Titles such as Rock Star's *Grand Theft Auto 3* and Reflection's *Driver 2* dominated the US charts in 2001. Both were developed in the UK. *Grand Theft Auto 3* was the biggest-selling game in the US in 2001, and games such as *Roller Coaster Tycoon* and *Sim Theme Park* featured in the top ten of PC games sale in the US.

A roadmap of the UK

UK-developed games have a 35 per cent of the UK market share, with *Who Wants To Be A Millionaire* topping the console charts in 2001, and games such as *Grand Theft Auto 3*, *Harry Potter*, and *Black&White* featuring in the top-ten of PC and console charts. Japanese-developed games accounted for 32 per cent (such as *Gran Turismo 3*), and US-developed games captured 26 per cent (such as *The Sims*).

So while UK developers can claim the title in market share in the UK, the



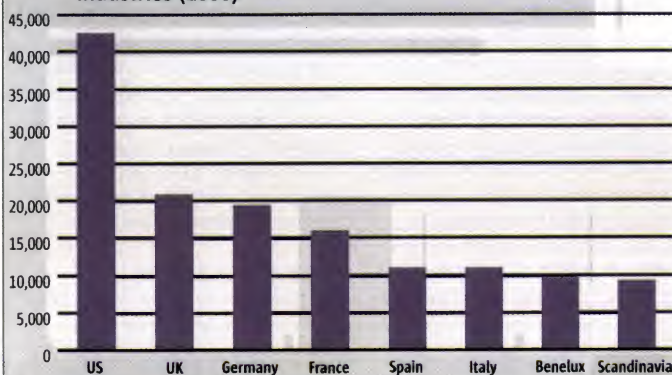
Elixir Studios, which is working on the title *Republic: The Revolution*, is a prime example of an independent UK games developer.

lead is slender – and UK developers could see their dominance evaporate in 2002. By contrast, Japanese developers account for 98.3 per cent of the games sold in Japan, with UK games accounting for just one per cent.

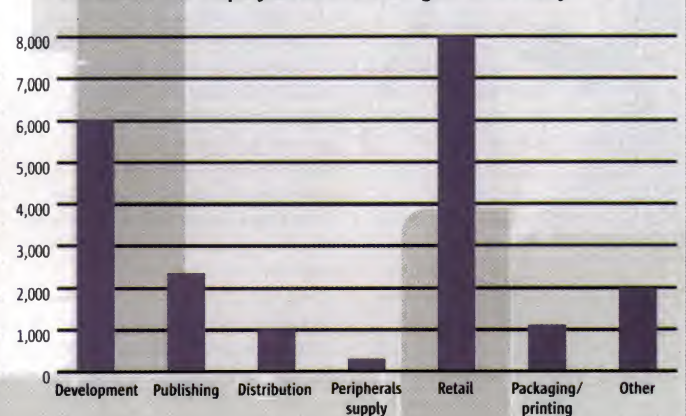
However, the report does show that the hotbed of UK games creativity has resulted in a vibrant and valuable industry that is a significant export money spinner. UK-developed games scored over £1.1 billion in retail sales



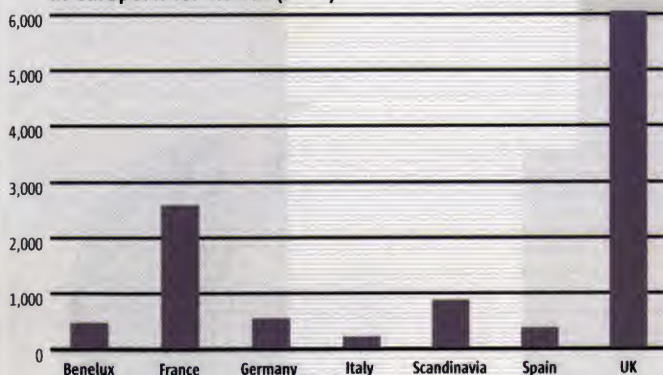
Number of people employed in national computer games industries (2000)



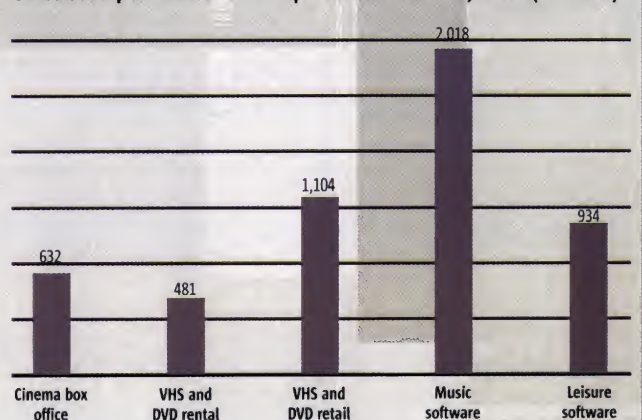
Breakdown of employment in the UK games industry



Number of people employed in computer games development in European territories (2000)



UK leisure purchases for comparable industries, 2000 (m units)



Source: DTL

outside the UK – and dominated the UK's entertainment exports in terms of trade contribution. In three years (1997-1999), the total positive trade contribution made by games was £757 million, compared to £462 million for film, and a loss of £944 million from TV.

But the games industry isn't just about revenue – the UK is the second-biggest employer of 3D artists and games developers outside of Japan. According to the DTI, the UK games industry employs more than 20,000 people connected with games development, behind the US, which employs 43,000. No data was available on Japan, according to the DTI.

Within these 20,000 employees, just over 6,000 were employed in development, compared to 2,600 in France, and 580 in Germany; the UK's games-production sector employs more people as a percentage of the national

workforce than any other country. The other 14,000 jobs are in games publishing, retail, and distribution.

The development sector is made up of 270 studios in the UK, the majority being small to medium independent studios employing, on average, 22 people. Most studios, the report found, have only the resources to work on a single title at a time, and supplement revenue by porting titles to other platforms.

The UK isn't

just a hotbed of smaller developers – there are 11 large independent developers that employ more than 100 people that are able to work on multiple projects. The DTI says these studios benefit from economies of scale – able to share development tools and technologies.

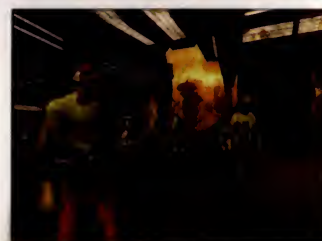
A game of two halves

The report highlights some serious challenges of the games industry, saying that while the UK's development talent is highly regarded throughout the world – particularly for its combination of technical, art, and gameplay skill – there are development weaknesses and emerging technologies that threaten it.

The most significant challenge stems from the market becoming increasingly hits-driven. For example, over 3,000 games were released in the UK in 2000. The top 99 titles accounted for a massive 55 per cent of all sales – signalling that it may be all but game over for smaller publishers. Worryingly, the majority of sales of a games title occur within the first three months – limiting the appeal and market life of back catalogues of games titles. It seems that games have a much more limited shelf life than albums or movies.

Coupled with this is the rise in processing power and storage capabilities of games consoles, and soaring development costs, further putting the squeeze on independent publishers. The average development budget for a console title is now around £2 million, according to the DTI, and requires a team of 20 working for up to two years. Compared to Japan, this is small-fry. Capcom is reported to have spent £15 million – and a team of 60 – developing its latest *Resident Evil* game.

The second challenge for developers is the lack of reputation – the value and importance of the UK games industry is widely misunderstood. The UK's spending on leisure software exceeded



UK independent developer Rebellion is drawing on its ownership of the 2000 AD brand to create a game based on the British comic strip.

cinema, plus DVD and video rental – yet financial institutions are reluctant to invest in a market that analysts often list as 'miscellaneous toys'.

Additionally, the games industry enjoys little of the government support that film does. The film industry has secured funding from the National Lottery, and has a unique framework of tax breaks for investors. A lack of mainstream advertising for games does little to raise awareness, says the DTI, with the single exception of Sony with its PlayStation 2 console.

Poor Press reports tend to label games as "violent, anti-social, and a waste of time", – a major factor in the lack of interest in the games industry.

For 3D artists and games developers, the message is bleaker – the general perception is that the games industry doesn't offer a serious career potential. Stemming from its grassroots development in the Sinclair Spectrum era, games creators have been labelled as being a hobbyist culture.

A talent for gaming

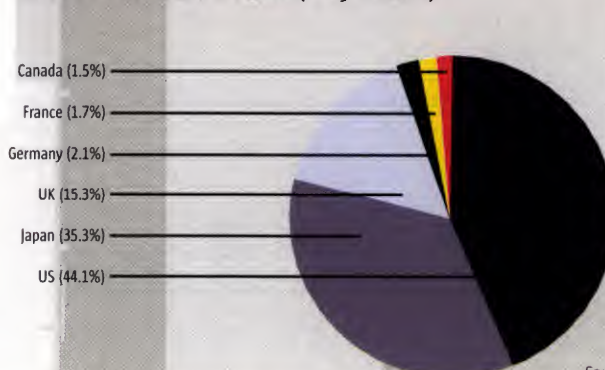
Yet that hasn't stopped a massive rise in demand for 3D game designers – with the industry experiencing a serious shortage of talent. It reports that numerous firms had difficulty recruiting experienced people.

This is compounded by the slow emergence of university courses

Estimated consoles installed base, June 2002 (millions)

	US	PAL	Japan
Sony PlayStation	26.8	34.6	17
Sony PlayStation 2	9.2	7.6	8.5
Nintendo 64	18.1	7.6	6.6
Sega Dreamcast	4.1	1.8	2.0
Microsoft Xbox	2.1	0.45	0.18
Nintendo GameCube	1.7	0.45	2.0

Global market share for 2000 (% by volume)



Source: DTI

catering for a career in the industry. And, while there's great enthusiasm for more high-profile courses, developers are skeptical as to their worth.

"Universities are setting up games courses because they're attractive to pupils – and that meets targets," said one academic quoted in the DTI report. "The concern is that colleges will realign existing courses to give them a games tag, rather than design specifically relevant courses for the industry."

One developer was more scathing: "Who is going to teach these courses? Academics are too far removed from the industry, and industry experts are too busy. Even if we could persuade industry experts to take up teaching posts, their knowledge would rapidly become out of date."

So what do employers look for in candidates? First, an enthusiasm for games and the ability to demonstrate a commitment to games design is better, according to developers, than a formal education. Enthusiastic graduates trained in fine art or science skills are

the order of the day, with employers willing to train candidates once employed. Other skills in demand are sales and communication skills (for pitching projects and products), and business and project-management skills.

Future gamers

So for a budding game designer, the UK market is a heady place – with a real demand for skills, and a heavy hitter on the world stage. Yet the emergence of a new generation of gaming platforms will prove the new battleground. Technologies such as interactive TV (iTV), mobile phone gaming, and online games, are key sectors tipped to surge.

Games are one of the most popular services on iTV – with over one million plays of *Tetris* in a 21-day period achieved on Sky Active – each game costing 25 pence. Forecasts predict that half of UK homes will have iTV by 2005 – more than today's consoles, and a little behind the predicted 54 per cent PC penetration.

Again, it is the UK that could well be a global leader. US and Japanese

iTV services are relatively immature compared to the UK, and UK games developers cut themselves a 29 per cent slice of the iTV gaming market in 2001. It is expected to still be dominant in 2005, with 17 per cent.

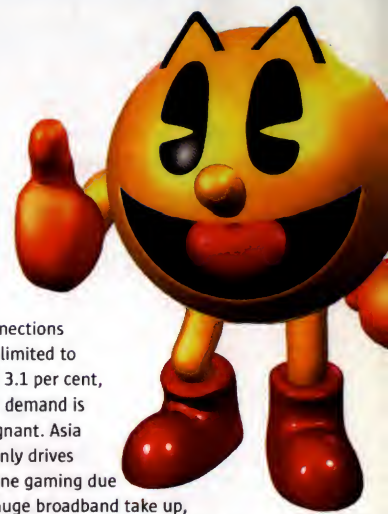
Japan, however, leads the way in mobile gaming – it accounts for 50 per cent of revenue, largely due to the success of DoCoMo's i-Mode service. Revenue was worth around £73 million in 2001 – forecast to rise to £1.4 billion in 2005, with the UK capturing five per cent in 2002, and up to nine in 2005.

The mobile market is one that demands tailored games – the small screen size and limited processing power means that games need to be authored for mobiles. It's one that the phone makers are taking seriously as a revenue stream; Ericsson has already licenced games such as *Tetris*, and it's now possible to download games onto the latest phones.

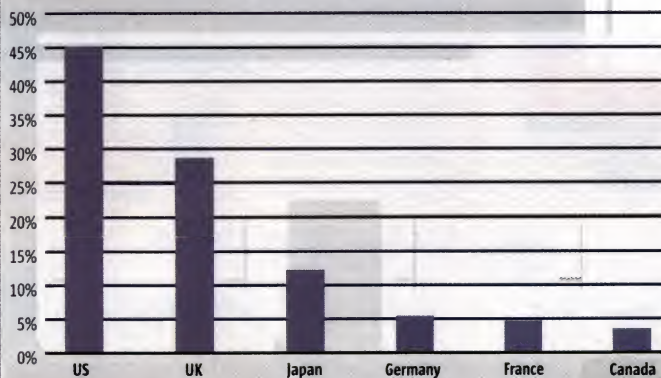
A bigger stumbling block may be online gaming. While the UK has a high Internet penetration – around 38 per cent of homes – high-speed broadband

connections are limited to just 3.1 per cent, and demand is stagnant. Asia mainly drives online gaming due to huge broadband take up, and will be the major player in the £0.89 billion online gaming market by 2005. The UK will barely register, according to the report.

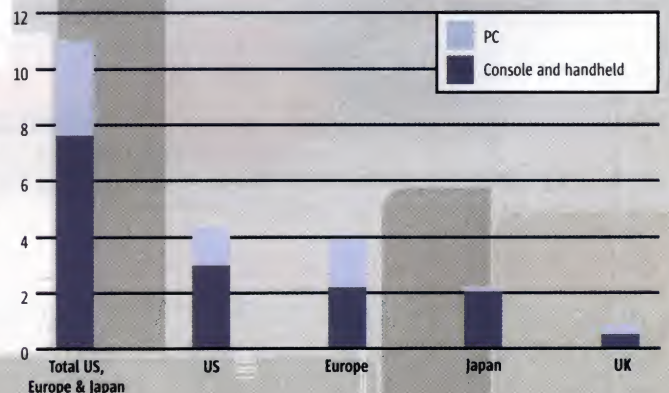
For its size, the UK market has made an impressive impact on the global stage. It might lack the profile of other entertainment industries, but it is a huge revenue generator. And while emerging technologies pose a threat, designers and developers looking to break into the industry should find it an interesting game to play.



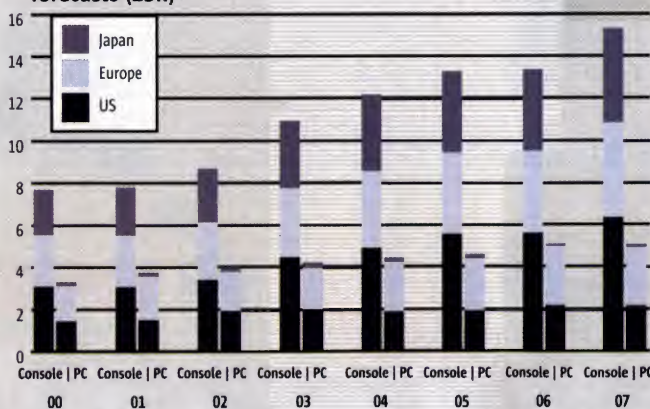
European 2000 market share by country of development (% by volume)



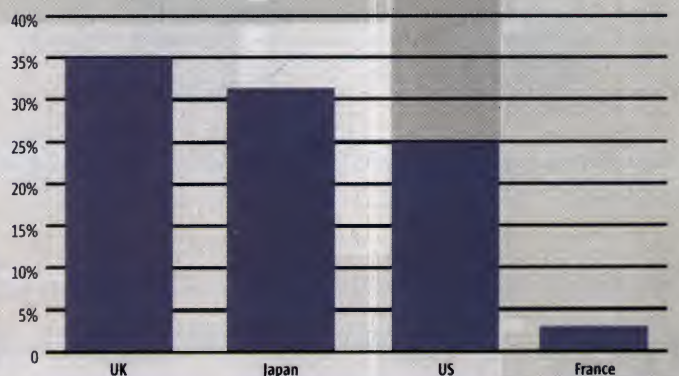
US, European and Japanese leisure software market, 2000 (£bn)



PC and console games software global market growth forecasts (£bn)

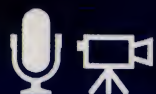


UK 2000 market share by country of development (% by volume)



Source: DTI

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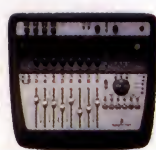
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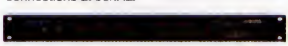
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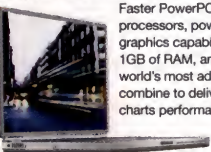
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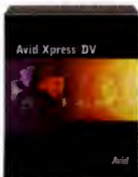
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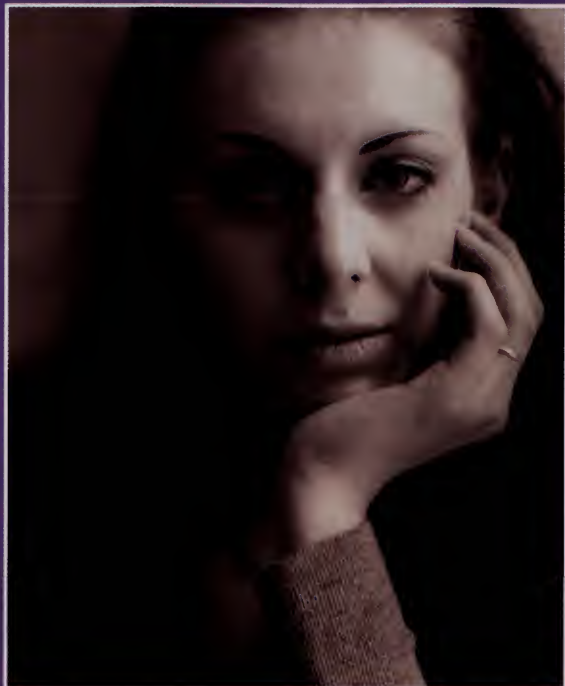


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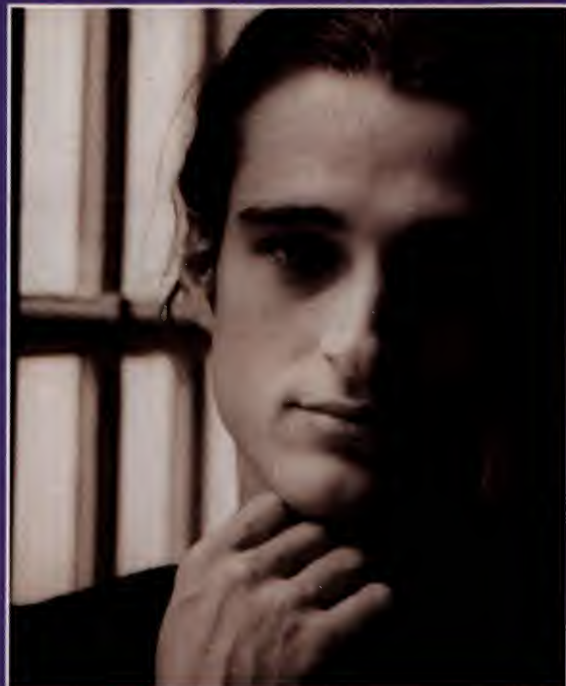
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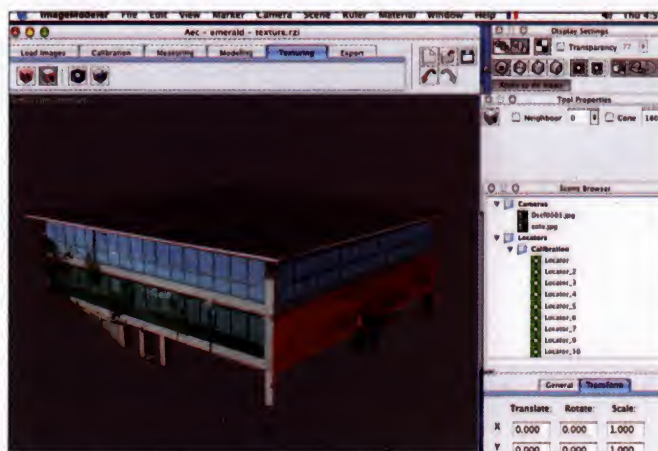
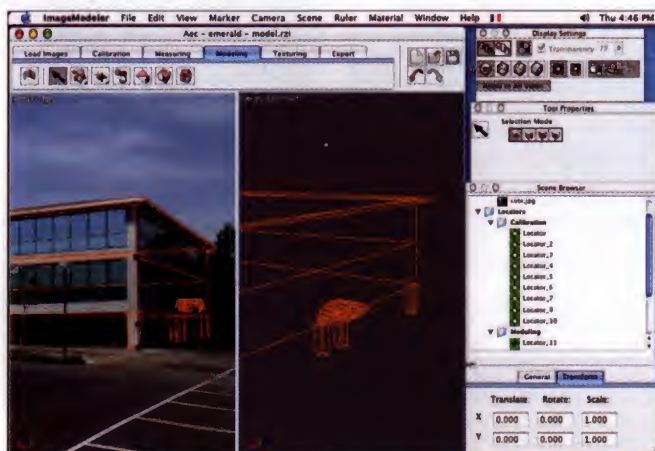
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ImageModeler updates 3D tools

RealViz's update to its suite of tools for creating 3D models from photographs see enhanced modelling tools and improved texturing controls.



RealViz has announced ImageModeler 3.5, an upgrade to the company's suite of tools for creating 3D models from photographs. The company has also launched a plug-in version of its ReTimer application for slowing down and speeding up video footage, called ReTimer SD.

ImageModeler 3.5 features an upgraded calibration engine and modelling tools, plus refined texturing control, according to the company.

The application requires at least two photos of the scene a user wishes to represent in 3D, though no camera or

set information is necessary. The package includes modelling tools such as the creation and editing of 3D primitives, extrusion, mirror and fusion.

Camera parameters, such as position and focal length, are automatically detected by the software – and it's possible to use multiple cameras with different parameters on the same project. Users can also use ImageModeler's reference coordinate system and a reference distance to place the image in a global scale. Angular constraints can also be imposed.

The application can output makers, locators, cameras, 3D objects and/or

textures in a wide range of formats including DXF, 3DS Max, Maya, OBJ, LightWave, Softimage|XSI, STL, RealViz XML, VRML, and Shockwave 3D for the Internet. Images can be imported in Targa, JPEG, Pict, PNG, Cineon, SGI, and other formats.

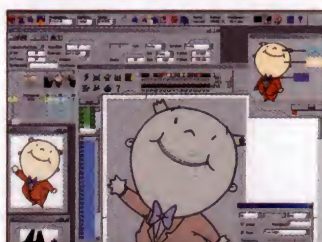
The update will ship for Mac OS X in December 2002, with the Windows 2000/XP version arriving early next year, according to RealViz. ImageModeler 3.5 costs €750 (around £480).

ReTimer is aimed at editors and compositors who want to slow down or speed up pieces of footage to a degree that most editing and compositing tools

cannot manage. The tool calculates the movement of every individual pixel, generating crisp frames between existing ones.

ReTimer SD is a plug-in for Adobe After Effects and works on both Mac OS X and Windows platforms. As an After Effects plug-in, ReTimer SD works inside products such as Discreet Combustion, Apple Final Cut Pro, and Pinnacle Commotion. It can manipulate SD footage in either PAL or NTSC format.

ReTimer SD costs €790 (around £510). RealViz, www.realviz.com
Computers Unlimited,
020 8358 5857



MediaPegs has released I-Pegs, a much less expensive version of its £10,000 Pegs cel animation suite that outputs only in Flash (.SWF) format. I-Pegs features almost all of the tools of Pegs, including high-level paint- and vector-editing functions such as autopaint and gap closing and can be networked for larger studios, according to MediaPegs. I-Pegs costs around £1,000 plus VAT.

MediaPegs, www.mediapegs.com
Techex, 08701 617 171

Microtek offers faster scans with USB 2.0

Microtek has announced its first scanner to offer USB 2.0 connectivity for transferring images to a user's computer even faster than FireWire. The ArtixScan 1800f also includes a FireWire port for connection to Macs and non-USB 2.0-enabled Windows PCs, which can use the bundled PCI card.

The ArtixScan 1800f has a maximum optical resolution of 1,800-x-3,600dpi, which the scanner can interpolate to 14,440-x-14,440dpi. Using the maximum optical resolution, captured images can be blown up to 500 per cent of their original size and still be used at 300dpi. It captures images with a true 48-bit colour depth and has an optical density of 4.8D.

The scanner features an 8-x-14-inch (203-x-357mm) scanning area for reflectives and an 8-x-10-inch (203-x-254mm) transparency scanning area.

It uses Microtek's Emulsion Direct Imaging Technology (EDIT) to scan film without glass to remove Newton Ring distortion. Film is placed on trays that slide into the body of the 1800f below the standard glass bed.

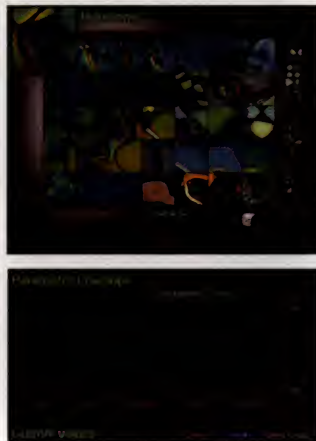
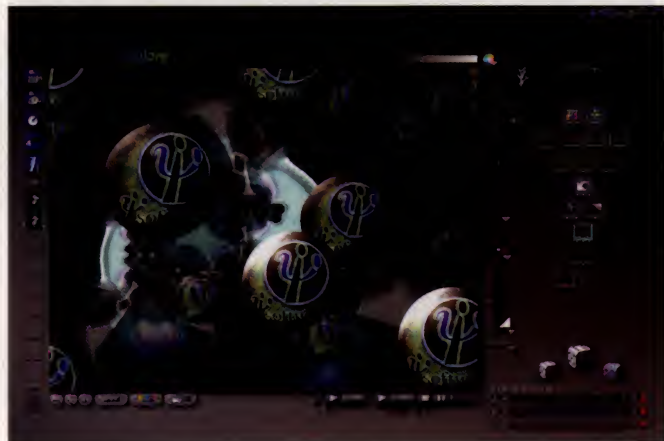
Multiple sampling allows the ArtixScan 1800f to reduce random image noise by scanning each line between two and 16 times, depending on user preferences. The scanner includes a built-in temperature-management system that maintains the CCD temperature at the optimal value for the best quality, according to Microtek.



The scanner ships with two scanning tools: LaserSoft's Silverfast v6 SRD and Microtek's own Scan Wizard Pro. The ArtixScan 1800f costs £1,530 plus VAT.
Microtek, www.microtekeurope.com
01908 317 797

ArtMatic gets speedier

Version 3.0 of ArtMatic Pro – U&I Software's graphics synthesizer – features support for Mac OS X with an optimized rendering engine, and adds batch rendering options, and AIFF and JPEG format handling.



U&I Software has released version 3.0 of ArtMatic Pro – a graphics synthesizer that runs on Mac OS 9 and OS X. The company has also updated the ArtMatic video-editing add-on VTrack to version 1.5. Both are available in Europe through Carrara developer Eovia.

The new version is now Mac OS X-native, with rendering-engine optimizations that have resulted in a 50 per cent improvement in speed, says the company. The workspace is now expandable to take advantage of large monitors, though the company admits that this can slow re-calculation times for images.

High-resolution input pictures are supported, which removes the restraints

on input image sizes in previous releases and allows any size of image to be imported. Batch-rendering of images is supported, which renders all of the images in the Recent Items menu.

ArtMatic Pro 3.0 adds a Send to VTrack command, which sends the current project to VTrack for mixing with video streams. AIFF support is provided for animation by sound and soundtracks, and the application now supports JPEG images for input. ArtMatic can now render out an image for each keyframe in an animation, and a new shader – balanced logarithmic CLUT (Colour Look-Up Table) – makes creating images with complementary colours easier, according to the company.

ArtMatic Pro 3.0 is available for

download for \$249 (around £160). It's available on CD with additional content for \$299 (£200).

U&I Software has also updated VTrack, a companion product to ArtMatic Pro that provides video-mixing capabilities. VTrack supports QuickTime movies, DV streams, still images, audio, and ArtMatic structures.

VTrack 1.5 is OS X-native, and works with the ArtMatic Pro 3.0 engine. New features include the ability to associate sounds with pictures and ArtMatic events, and support for large library sizes has been added.

VTrack is available for download for \$249, or on CD for \$299.

Eovia, www.eovia.com
Softline, 01883 745 111



Sharp's VL-MC500H

Smaller and lighter than most DV camcorders, Sharp's latest FireWire equipped ViewCam has the styling of a digital-still camera.

ViewCam DV camera debuts

Sharp has released its latest ViewCam DV camera that, like the others in the range, shares the same wide, flat style as traditional digital-still cameras. The VL-MC500H can also be used as a digital-still camera, capturing images using its 1.33 megapixel CCD.

The VL-MC500H measures just 145-x-87-x-66.6mm and weighs only 511g, making it smaller and lighter than most DV camcorders. It features a 10x optical zoom lens, which is supported by a digital-image stabilization system to minimize jumpy footage.

A Digital Gamma Brightness Compensation Circuit also features that, according to Sharp, automatically

lightens dark sections of the picture without saturating bright areas.

The DV camera uses conventional miniDV tapes for recording video and includes an 8MB SD memory card for capturing still images. The camcorder includes a FireWire port for transferring video to and from a user's computer. The VL-MC500H also includes an analog video input port. Still images can be downloaded using the FireWire port or via a USB cable.

The VL-MC500H costs around £640 plus VAT.

Sharp, www.sharp.co.uk
0800 262 958

HOT STUFF

Microsoft updates 64-bit SQL code

Microsoft has released a second beta-test version of its upcoming 64-bit SQL Server 2000 database, which is due to ship next April along with the 64-bit version of Windows .Net Server 2003 operating system. The company has announced that a third set of bug fixes for the 32-bit version of SQL Server 2000 is now available for beta-testing. Microsoft, www.microsoft.com

Vue d'Esprit bug-fix posted

E-on Software has released version 4.11 of its Vue d'Esprit 3D landscape-generator. The update includes all fixes from previous updates, and fixes problems in the Mac version caused by OS X 10.2. Fixes include the ability to use clipboard data in other applications, and eliminate problems rendering glows to disk, and with lighting in clouds. Some Mover 4-specific issues have also been addressed. E-on Software, e-onsoftware.com

Six Degrees 1.5 released

Creo has released a version 1.5 update to Six Degrees, its email productivity software for creatives. The update is free for existing users. Six Degrees allows users with Microsoft Entourage to connect and display related emails, related files, and contact information quickly and easily, Creo says. It builds a database of important data that can be navigates while working with email. Creo, www.creo.com/sixdegrees

Iomega intros mini USB drive

Iomega has announced its Mini USB Drive in 64MB and 128MB capacities. The key-sized drive works attaches to an available USB port on a computer. The Mini USB Drive sports a sliding key-ring design that moves between the drive body and the cap, according to user preference. Users can keep the key ring with the drive when travelling, and then detach the key ring from the drive when it's connected to a computer. UK pricing has yet to be announced. Iomega, www.iomega-europe.com
020 7365 9527



Dell updates Precision line-up

Based on Intel's latest line of Xeon processors, complete with hyperthreading technology, Dell's new Precision workstations pack a punch.

Dell has become the latest workstation manufacturer to release models based upon Intel's latest of line of Xeon processors and associated chipsets. The high-end Precision 650 and mid-range 450 join the recently announced 350, which is based around Intel's latest set of Pentium 4 processors up to 3.06GHz.

The Precision 650 and 450 offer single or dual Intel Xeon processors up to 2.8GHz. These feature a 533MHz front-side bus and support Intel's hyperthreading technology, which boosts performance in multi-threaded, processor-intensive applications by turning each processor into two virtual processors.

Both models support up to 4GB of dual-channel DDR memory, and include integrated Gigabit ethernet and USB 2.0. The 650 includes integrated Ultra 320 SCSI, allowing support for fast SCSI drives. This is optional on the 450.

The Precision 650 and 450 support AGP 8x and PCI-X for faster peripheral connectivity. Dell suggests ATI's Fire GL Z1 graphics cards for base systems; the Fire GL X1 for mid-range systems; and 3DLabs' Wildcat4 7110 for high-end units.

The main difference between the 650 and 450 is the case design. The 650 has a larger case and more bays, while the 450 has a smaller case for tightly spaced environments and is less expandable.

A base model Precision 650 costs £1,049 plus VAT. Dell lists a sample configuration with two 2.8GHz Xeon processors, 2GB of ECC DDR RAM, a 3DLabs Wildcat4 7110 graphics cards, two 36GB SCSI hard drives, a DVD/CD-RW combo drive and a 17-inch LCD screen for £4,539 plus VAT.

A base Dell Precision 450 costs £899 plus VAT. The £2,879 sample configuration includes a single 2.8GHz Xeon processor, 1GB of ECC DDR RAM, an ATI Fire GL X1 graphics card, a 120GB IDE hard drive, a combo drive and a 17-inch LCD screen.

The Precision 350 offers Pentium 4 processors at speeds up to 3.06GHz, with a 533MHz front-side bus and support for hyperthreading. A 350 with a 2.66GHz Pentium 4 chip, 512MB of ECC RDRAM, a FireGL Z1 graphics card, 48x-speed CD-RW and a 17-inch LCD display costs £1,399 plus VAT.

Dell, www.dell.com/uk
0870 152 4699



BBEdit 7.0 adds version management

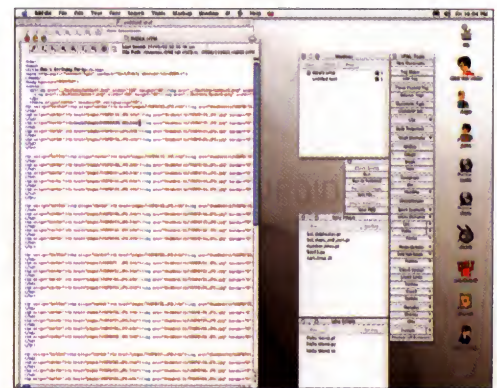
Bare Bones has released version 7.0 of its popular Mac-based BBEdit coding tool for Web languages including HTML and JavaScript. The update includes many features designed to help users administrate multiple, complex sites using features such as version-management.

BBEdit 7.0 gains integrated support for CVS – the Concurrent Versions System source control package – which Bare Bones claims allows users to work transparently with source files from multiple repositories. The upgrade also enables users to work on multiple Web sites via the application's HTML Web Site preferences, without them getting mixed up.

The company has enhanced the BBEdit command-line tool, which includes support for go-to-line number. Support has been added for syntax colouring for ASP and VBScript, and HTML tools can now recognize and

manipulate XHTML 1.1. A new Close Current Tag command is designed to speed up tag creation.

The update also gains a Microsoft Office-style rectangular-selection tool for selecting areas of text rather than complete lines. A menu-driven and key-bindable Glossary item selection feature is new in version 7.0, which is designed to ease the insertion of regularly used text into documents. Other new features include a Paste Previous Clipboard command, Quartz text smoothing in editing views and improved support for Mac OS X 10.2.



Bare Bones has followed the release with a downloadable update, 7.0.1. This doesn't add any feature, but fixes a number of bugs.

BBEdit 7.0 costs £139 plus VAT. It runs on Mac OS X and 9.2.2. Bare Bones, www.barebones.com
Cancom, 0800 396 696



Plextor has released a portable PlexWriter 24/10/24 CD-RW drive that connects via USB 2.0. The drive writes CD-Rs at a speed of 24x, re-writes CD-RWs at 10x, and reads CDs at 24x. It measures 141-x-22-x-171mm, and weighs slightly less than a 410g bag of sugar. The PlexWriter features a 2MB data buffer; Digital Audio Extraction rates to a maximum of 24x; and supports a variety of CD writing modes. The drive also features buffer under run proof technology, and costs £135 plus VAT.

The company has also released its first 48x speed blank 700MB CD-R media – available in packs of 10 and 50. Pricing has yet to be set.

Plextor, www.plextor.be
0032 2 725 55 22



Epson boosts resolution

The Perfection 3200 Photo has an optical resolution of 3,200-x-6,400dpi and a built-in transparency unit.



Epson has announced the Perfection 3200 Photo, which the company claims is the world's first low-cost scanner to offer an optical resolution of 3,200-x-6,400dpi. The flatbed scanner also offers a built-in transparency unit, new scanning software and multiple connectivity options.

As well as reflectives and 35mm film, the Perfection 3200 Photo can scan medium and large format film on its built-in 4-x9-inch transparency unit. The scanner features Epson's On-Chip Microlens, which the company claims

provides faster, more accurate scans – more than three-times faster than the Perfection 2450 Photo that the 3200 Photo replaces. The Perfection 3200 Photo captures images at a 48-bit colour depth, and has an optical density of 3.4D.

The scanner ships with a wide range of bundled software. The 3200 Photo sees the debut of Epson's own Scan tool. Designed to appeal to users with a various levels of scanning knowledge, it offers three modes: home, amateur and advanced. These provide various levels of automation

and manual functions to suit individual users' needs.

Other tools include SilverFast SE 6 with Negafix, which offers real-time pre-scan image adjustment and correction. SilverFast SRD allows dust and scratches to be removed quickly from film, says Epson. SilverFast ACR is designed to restore old and faded photographs. Adobe Photoshop Elements is included for image adjustment.

The Perfection 3200 Photo costs £297 plus VAT. Epson, www.epson.co.uk 0800 220 546



LaCie FireWire Big Disks max out at 500GB



LaCie has announced a desktop FireWire hard-drive that offers a whopping 500GB of storage. The 500GB Big Disk is the largest the company has made to date and is currently the largest on the market. A faster 400GB version is also available.

With their high capacity, the Big Disks are aimed at digital-content creators. According to LaCie, the 250GB model can store more than two days worth of uncompressed digital-video footage and the equivalent of 28 full DVD-Videos in MPEG-2 format. The 400GB version uses a 7,200rpm drive, while the 500GB models uses a 5,400rpm drive.

The new models feature an upright aluminium design introduced on earlier drives, which dissipates heat, and prolongs drive performance, according to LaCie. The drives also offer a physical security feature that allows the use of Kensington-compatible chain locks.

The 500GB Big Disk costs £649 plus VAT. The 400GB model costs £599 plus VAT.

LaCie has also released the 52x CD-RW, which is the fastest possible CD burner using current disc-creation technologies, according to the company. The drive writes CD-Rs at a speed of 52x, re-writes CD-RWs at 24x, and reads CDs at 32x. LaCie states that this allows the drive to write 60 minutes worth of data in under two minutes and create CD-RWs in under three minutes. The drive supports buffer under-run protection, and can adapt its speed while burning to avoid errors.

The FireWire version of the drive costs £119 plus VAT, while a USB 2.0 version costs £109 plus VAT. The U&I version, which includes both FireWire and USB 2.0 ports, costs £139 plus VAT.

LaCie, www.lacie.co.uk 020 7872 8000



HOT STUFF

Opera 7 beta released

Opera Software has released a beta of version 7 of its Web browser, Opera for Windows. Both smaller and faster than earlier releases, says the company, it represents a full rebuild of the browser. At its heart is a redesigned rendering engine that provides improved support for Web standards such as Document Object Model Level 2; extended Cascading Style Sheets Level 2; and HTML 4.01. Opera Software, www.opera.com

PDFshrink hits version 2.0

Apago has released PDFshrink 2.0, which the company says can reduce the size of most PDF files from five to 90 per cent their original size. It does so by removing duplicate images and metadata, page thumbnails, and Photoshop and Illustrator edit info. PDFshrink offers control over image compression and resolution, and supports various compression methods to optimize embedded images in PDF files. Annotations, form fields, JavaScripts and digital signatures are all maintained. Apago, www.apago.com

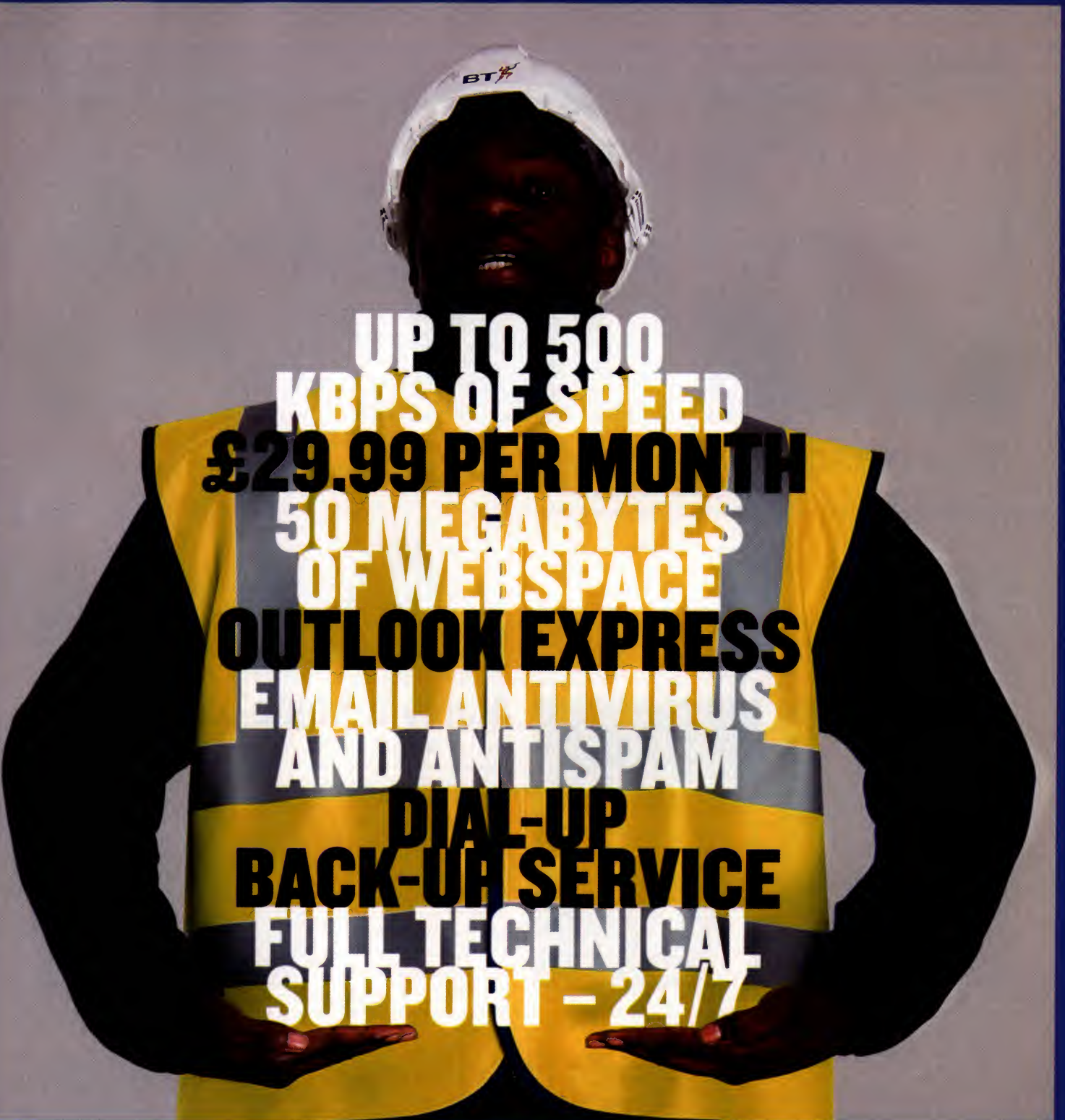
Carrara gains entry-level tool

Eovia has launched Carrara 3D Basics, a cut-down version of its professional 3D tool. Features include spline, metaball, terrain and text modelling, with 11 3D primitives built-in and 900 models bundled with the application. It can export to Adobe's Atmosphere 3D Web application via the bundled WebXport 2 plug-in. Carrara 3D Basic costs around £60 plus VAT. Eovia, www.eovia.com Softline, 01883 745 111

3D figure generator updated

3DMeNow Pro 2 allows users to quickly create 3D models of people from photographs and other media. Version 2 adds enhanced base models with heads, busts and torsos. Morph targets have been improved, as have modelling and texture mapping, according to Biovirtual. Other new features include output in 3DS Max and LightWave formats, real-time output with audio compression, full-screen video output and batch morph target export. It costs \$2,299. Biovirtual, www.biovirtual.com





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It's a grand life collection

ImageSource has launched its latest catalogue, *Grand 4*. The collection includes 48 exclusive CDs of images, which are inspired by current street, music, and market trends, according to the company.

The *LifeStyle* CDs focus on demographics that ImageSource feels are under-represented by current collections, such as 40-somethings with no children and high disposable incomes. The *Business* CDs mix business with lifestyle, says the company.

Most CDs in the collection cost £399 plus VAT.

Imagesource, www.imagesource.com
020 7376 6789



Alamy is home and away

Alamy has boosted its collections of non-US content with the addition of 75,000 images from Europe and Asia Pacific.

The collections include Dinodia Photo Library and Indiapicture's traditional and cosmopolitan Indian imagery; Etcbild's contemporary Swedish lifestyle catalogue; Christopher Gomersall's UK wildlife and birds; and Alex Segre's pictures of Ibiza club culture and English scenes.

The images are split between royalty-free and traditional licensing controls.

Alamy, www.alamy.com
01235 844608



NEW FACES

P22 has released *SchwarzKopf*, which the company claims is "not named for the famous stout US General, but rather a self-descriptive black headline font". Created by Hungarian designer Gábor Kóthay, the 18th Century 'Schwabacher' blackletter features New and Old style variations, including the long 's', and several letter variations and ligatures. *SchwarzKopf* costs \$29.95 (around £19). P22, www.p22.com

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Star letter – Gaming bubble burst overhyped

Thanks for your overhyping of the collapse of the gaming industry (**DIGIT** #55) – so typical of doom and gloom magazines that tend to overplay the downers and file away the good news. It seems every magazine and newspaper likes to say that games are bad (and therefore games designers are bad too).

Of course, people such as you are looking around for the game-design market to collapse – it's one of the bright spots in the creative industry right now after the dotcom disaster, and gaming seems to be the most innovative.

Games-designers are great people, highly talented, and worthy of better than scaremongering. It's hard enough without added pressure from top magazines like **DIGIT** putting their boot in.

Clive Martin

*We'd never put the boot in – **DIGIT** has many readers who work in the games industry. That story was a report on what some of the movers and shakers in the industry felt, in their words. To make up for it, this issue has a comprehensive overview of the real state of the game-design industry in the UK.*



Accessibility ability

With the review of LIFT this issue (**DIGIT** #55), and your features on accessibility I can honestly say you are the top resource for accessible design. But, how about a full issue about it? Or, better, a list of software that has accessibility output and features?

Jim Mason

Good idea – also, what are the accessibility issues that readers face with applications or design? Write and let us know.

Mobile mayhem

One area that your otherwise excellent magazine lacks is coverage of creating content for mobile devices, such as phones and PDAs. Is this something that I can expect to read soon?

Aaron Williams

It's a complex area, but if we get some demand for it (say, two more letters,) then we'll do it.

Vectoring in on plug-ins

I have never seen a round-up of vector plug-ins before, so thanks for that in the December edition. It is also worth noting the fundamental shift that has occurred in the graphics software industry as a result of plug-ins of all kinds. Plug-ins (and XTensions, etc) have made it possible to match the general-purpose applications to very specific tasks, making many specialized and expensive applications obsolete.

Adobe may have made life difficult by changing the interface, but there is remarkable scope in the amount of customization that can be achieved with Illustrator. Although there are plenty of subtle issues that the developer needs to duck and weave around, it's a very clever application internally.

Any business that has a level of specialized requirements need not feel constrained by the limited range of ready-made plug-ins. By commissioning a plug-in to meet their specific needs they can improve productivity, improve quality (by avoiding cock-ups), and increase creative opportunity.

They're obviously not cheap, but they can pay for themselves rapidly. You can find a plug-in developer by visiting the application vendor's Web site; for example, a search at <http://partners.adobe.co.uk> will produce a list of 27 UK-based developers offering custom plug-ins.

We offer a free kaleidoscope Illustrator plug-in to demonstrate some of the possibilities: new tools on the toolbar, new object types, menu entries, Appearance pane info, special cursors, and so on. You can request this via our Web site at www.shillito.co.uk.

Bob Shillito

Glad you liked the feature – we feel that plug-ins are a great way to enhance your creativity, so expect more.

Software ghosts in the machine

I get the impression that **DIGIT** is directed towards the professional, semi-professional or high-end amateurs, yet I'm finding that many of the demos or free software supplied with the mag won't work on a higher-end PC. For example Poser 3.0, which I've recently tried to install, won't work on my machine (a twin processor PIII with 1.5GB RAM) because Poser can't count the RAM properly:

it doesn't think there's enough memory on my machine.

I've encountered this problem before, Authorware in particular, and reducing the memory available to less than 1GB cures it, but this defeats the point of having a decent machine. Sadly, these applications work on my older PC, a PII 400 with 384MB RAM, but the thing is so slow that it just isn't practical.

Surely, a magazine that deals with and reviews many top-end applications could supply software that works on these machines. It must be worth the software makers' efforts to supply yourselves with decent versions as I try these demos to assess quite how they work with my other applications, with a view to purchasing the things. They're just too expensive to buy them only to find that you can't import/export the files to where I'd rather work on them. Excuse the moans, and keep up the great work.

P J Bosworth

A good point. Free software is often an older version, as software makers are understandably loath to give away more up-to-date full versions – and so were often on sale 18 months previously, and systems have simply passed them by. We'll continue to keep trying to give away more recent applications, and hope to improve things.

Home alone

I recently escaped the office and opted for the home working option. For the last two years I was cooped up in an office in East Yorkshire doing fairly monotonous multimedia stuff that, slightly too often, consisted of sitting by the CD-writer making 35 copies of my latest masterpiece.

Yeah, the coffee was free, as were the Bicos, and yes it did have that slight benefit of a fixed salary, but I kept thinking that in five years time, I'm still going to be here only if I'll get a company Renault Laguna. So, I left to seek my fortune in London.

So here I am and I'm earning enough money, though so far I'm making less than I was in Yorkshire. Obviously, being a freelance new-media designer, there's no regularity to my income. However the type of work I'm getting is more varied and enjoyable. As far as free time goes, there's more of it to go around – though there's a problem. With there being no physical barrier between work and leisure,



the work does tend to leak into play time a bit. Because I work from the bedroom I often go to 'just change one last thing' at about 7pm and find myself sat there at midnight.

The other problem is that I'm starting to go slowly insane. It's only a matter of time before I start talking to my flatbed scanner. Although I don't miss the nightmare of getting to work, I'm starting to miss working with other people. I also think that creative work can go a bit stale if you stare at it all day with no external input from your colleagues; objectivity is often lost.

I'm sticking to my guns for now in the hope that, any day now, that 30K contract will come through the door, but I am thinking long-term that I might find something out there in the city. I'm just fortunate enough that I don't have to jump at the first offer that comes along.

Anyway, I'm off to the shop to buy some new Biro's, and some coffee.

Adrian Rowbotham

Under a bad spell

Matthew Bath is right about the possible errors from using handwriting software. Also his grammar checker needs to be shown the difference between 'bares' and 'bears'. Mind you, I once saw a sign at a rubbish dump in Canada warning that 'Trespassers will be bared!'

Terry Fletcher

Of course, the entire column was written using a Tablet PC and handwriting software (cue embarrassed cough).

Tablet PCs are design a dozen

Every time I read about Tablet PCs in **DIGIT**, I've been thinking: why does a creative magazine keep writing about something that is so obviously corporate? Designers need power and workstations and creative software, not fancy writing pads that will be used by spreadsheet jockeys.

Well, it seems as if I was wrong. The feature in last issue (**DIGIT** #55) showed that Tablet PCs really can be creative tools – and I was an eager convert by the time I got to the end. It's great to see they haven't skimped on power (being essentially a laptop with flip-top head), and that the range of software seemed to have a reassuringly creative bent.

It's great to see companies such as Alias|Wavefront, Corel, and Adobe releasing creative applications. How long do you think we'll have to wait for a Tablet PC version of Adobe Photoshop or Corel Painter?

Also, if you're reviewing them, can you please talk about the pen pressure? I hear that some of the Tablet PCs don't feature that as standard.

Jonny Eastwood

*We think Tablet PCs hold a lot of promise – and we'll keep bring you the facts here first. Also, check out our first Tablet PC reviews next issue, and be sure to test-drive Alias|Wavefront's SketchBook software, exclusive only with this issue of **DIGIT**.*

Taking flight with Icarus

Thanks for the excellent covermount of Icarus with the latest issue – great to see a British institution deliver such an awesome package (OK, a bit flaky, but still) and then give it away. Now I know my tax credits are being spent wisely (although does that mean that this issue of **DIGIT** is tax-deductable?).

Anyway, the real reason for writing is that I'd love to get involved creating or beta testing creative software. It seems that there's a ton of applications that creative people like me need, and we represent a great sounding board for big developers. How do I get involved with this, and are there any UK groups that are dedicated to creating open-source software targeted at the creative industry?

Gina Chitwood

Any readers know? Please write in.

Tutankhamun – make yourself at home

A good, in-depth article on the making of *Who Killed Tutankhamun...* Revealed in the new issue. More please! However, would it be possible to detail how companies such as Atlantic Productions win this kind of project? I too have 3DS Max and After Effects, and am sure that I could put my skills to good use on something as cool as that.

Richard Cone

Maybe we should start a pitching forum online?

Moreband is here

The broadband problem seems to have been solved. Your news that Sony is to release an online version of its PlayStation 2 console (image, left) means that demand should rocket. Surely, everyone can stop whining about the lack of broadband.

Alison Page

It's good news that Sony is doing this (remember how the PlayStation 2 boosted the DVD market), but it seems as if it's broadband supply that's the issue.



Shutting up Photoshop?

Is it just me, or don't you wish there was a viable alternative to Adobe Photoshop? It's great and all, but I like to have at least some competition driving innovation.

Andrea Phillips

Photoshop is a great package, but there are others, such as Binuscan's PhotoRetouch Pro. What do readers think – does anything else beat Photoshop?

Quark is no lark

I seem to remember that you said that **DIGIT** would move over to InDesign, and that this would be documented in the mag. Has this happened, and what was your experience? Have any of your readers made the switch to InDesign and benefited (or otherwise)?

Chris Cole

We're in the process of doing this – expect a full report soon. Any readers want to share their experiences?

**Macworld
AWARDS 2002
WINNER**

X
Compatible



The Kube

The Kube offers real flexibility and portability and is easily expandable. The removable drive - bays are great for keeping projects with big files safe and graphic studios are able to keep project files separately from each other.

- IEEE 1394 FireWire Interface • Up to 400MB / sec
- Keylock Hot Swappable • Four 4cm cooling fans (Front and Rear Max air flow) • Dual Hot Swap Trays
- ATA 7200 rpm

Dual FireWire 2 x 60Gb	Dual FireWire 2 x 80Gb	Dual FireWire 2 x 120Gb
120Gb £425	160Gb £475	240Gb £599

MACWORLD STAR RATING
★★★★/8.5



X
Compatible



The Ice Warrior

The IceWarrior's revolutionary design offers great performance and reliability. The perfect storage solution for any Firewire or USB2 equipped Mac or Windows PC.

- Fast FireWire (IEEE 1394) up to 400mb/sec
- USB 2 connectivity
- Rotational - disk speed 7200rpm
- Hot Pluggable
- Size 22cm x 12.5 x 3.5

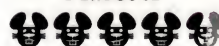
"The IceWarrior is flexible compact and fast." MacWorld

7200 rpm	7200 rpm	7200 rpm	7200 rpm	7200 rpm
60Gb £129 FireWire	80Gb £159 FireWire	120Gb £199 FireWire	180Gb £279 FireWire	200Gb £299 FireWire
7200 rpm	7200 rpm			
80Gb £175 USB2/FireWire	120Gb £230 USB2/FireWire			

MACWORLD STAR RATING
★★★★/8.7



MacUser



The Firelight

Small enough to fit your pocket big enough for all your stuff. The FireLight has everything you demand in a hard working and versatile drive. Easy installation just one cable to connect. No external power supply required (Mac only, PC users will require external power supply optional extra). Extreme portability, striking design and high performance.

- Fast FireWire (IEEE 1394) up to 400MB/sec
- USB 2 connectivity
- Hot pluggable
- Bus - powered (Power Supply Optional)
- Windows/Mac OS 9.1 or higher (Mac Driver Optional)

5400 rpm	5400 rpm	5400 rpm
20Gb £149 FireWire/USB 2 combi.	40Gb £199 FireWire/USB 2 combi.	60Gb £299 FireWire/USB 2 combi.

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50	Realsoft 3D 4.5
52	Scalado ImageZoom 2.0 Pro
55	TypeMaker Colour Confidence

Reviews

DIGIT ratings



The best product in its class



Fantastic package – almost perfect



Highly recommended



Above average with some flaws



Average



Below par with serious limitations



Fundamentally flawed



Lacks any redeeming features



Avoid

DIGIT Best Buy

The prestigious **DIGIT** Best Buy award is only given to products that are in the top-flight of their class. The product must offer professional creatives compelling design advantages, leading the way in its field. **DIGIT** Best Buy products are compelling solutions, often delivering innovative technology or unique tools, or are simply the best of their kind.



DIGIT testing

DIGIT brings you exclusive UK reviews of professional creativity packages – and when we say exclusive, we mean exclusive. **DIGIT** only reviews the finished versions of software packages – the same version you end up buying. All products are submitted to the leading IDG/**DIGIT** labs for testing – making **DIGIT** reviews ones you can trust. All tests are carried out with benchmarking software, and **DIGIT** reviews more creative products every month than any other UK magazine.

Buying notes

All prices in product reviews are listed without VAT added (17.5 per cent), and are correct at press time. Some manufacturers are unable to supply RRP (recommended retail prices) by law, in which case an average street price will be given.

Online review

DIGIT Online (www.digitmag.co.uk) for all your review needs, with exclusive reviews constantly updated.

DIGIT EXCLUSIVE

Softimage | XSI 3.0

Pro 3D modelling and animation

FORMAT: Win/Linux
PRICE: Around £4,270; upgrade from around £880
COMPANY: Softimage, softimage.com
CONTACT: Tyrell, 020 7343 5500

NEW FEATURES

- 3D modelling tools.
- Keyframe and automatic animations.
- Full IK and character-animation.
- Non-linear animation editor.
- Fully featured renderer including caustics and global illumination.

Stiff stuff

XSI 3.0 features impressive soft-body dynamics (below, left). However, users have to cheat hard-body dynamics by increasing the stiffness of objects.

Motion-blending

Character-animation tools have been improved (below, right). Users can now blend motions together more quickly.

The Softimage name is legendary in 3D. It's been around since the beginning, and has been popular among film-effects studios for years. Now with prices tumbling, and the features of its competitors improving all the time, XSI 3.0 will have to work hard to maintain its place. Though beta releases have been available for some time, this is the first review of the final release version.

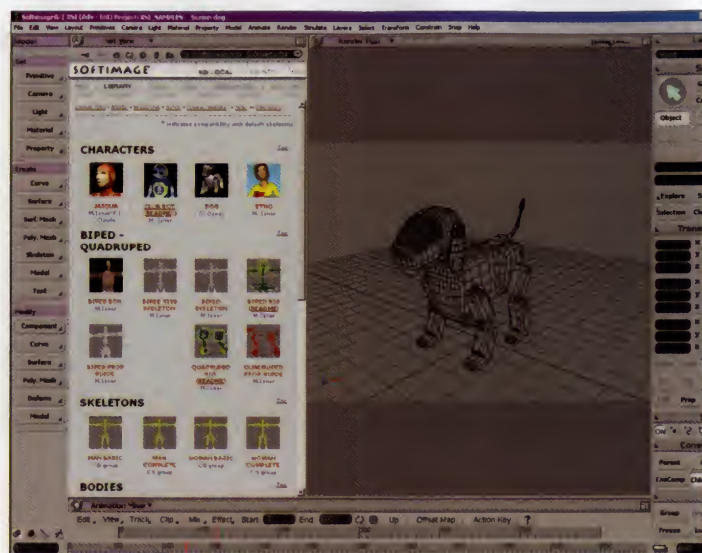
Softimage has been streamlining its standard modelling tools for a long time now, and the new version builds on them rather than completely re-writing them. However, there are some useful new touches – such as the ability to hide polygons so that when a user is working with a complex model, the parts that aren't being edited vanish. By this, viewport updating will be a lot faster, and tool performance will increase. Mesh-editing tools have also been made faster.

Strike a pose

There's a new character section on the animate toolbar that includes, among other things, biped and quadruped guides. These tools help users quickly set up characters: simply position the guide so that the limbs follow the model a user has created, and then allow the package to build a skeleton to those dimensions. The result is a skeleton that's well matched to your model, and has foot-roll setups for game or video jobs.

Another useful character tool is a special spine chain – a tool designed for the torso and neck of a character, but that works well for tails and tentacles, too. The spine replaces traditional bones in those areas, and makes for much more realistic bending and twisting motions.

New tools also help with the tricky problem of skinning characters by attempting to retain the volume of



Live, with a net

The net view is a quick way of locating and importing scene elements, motions, textures, and objects. Users can also use links in the HTML window to control on-screen events.

a skin as it's bent, or compressing the joint. This can help with thorny issues such as shoulder and knee joints.

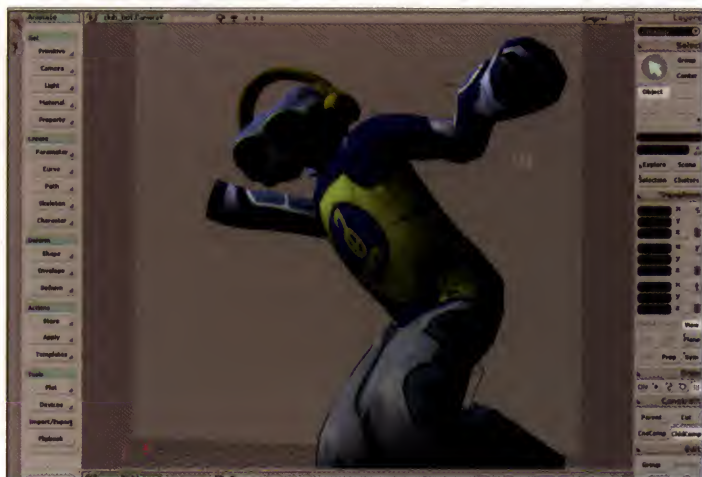
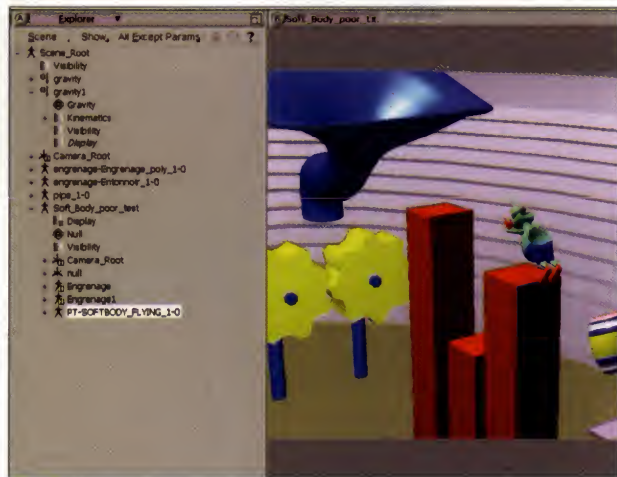
In addition, there's a character generator – a little like you'd see in Curious Labs Poser – where users can create new human figures by adjusting sliders to control the character's body and facial attributes. It's a quick and easy feature, which might come in handy, but it isn't a part of the programming – the character generator shows off quite successfully just what you can achieve without scripting by building your own tools inside XSI 3.0.

Animation admiration

XSI's ground-breaking non-linear animation editor – a feature since the first release – allows users to use an animation as a block which can then be cut-&-

past, repeated, combined, or merged with other animations to create a scene. Non-linear animation editing has been improved in this upgrade – especially in the way that complex animations such as character movements can be blended.

These improvements come from the idea that, just as a complex sound is made up of different repeating patterns and frequencies, so a complex animation can be thought of in the same way. A walking character has different rhythms set up by his hands, feet, head, and other body parts. The motion may be made up of dozens (or if it's motion-capture data, hundreds) of keyframes, but if you can analyze the waveforms, you can work with them in a more intuitive way, changing the characteristics of motion, or creating loops and transitions between movements more easily and smoothly.



Because users can play animations on the same object simultaneously, XSI 3.0 introduces ghosting. Ghosting lets you play back your motion, watching the contributions of different animation tracks to the finished movement.

Following in the footsteps of packages such as NewTek LightWave, high-dynamic-range (HDRI) images can now be used to create global lighting for your scenes. These are photographs taken at various lens apertures so that lighting intensity from every direction can be accurately measured and reproduced automatically in your 3D scene. However, few people are likely to go to the trouble of taking HDRI images, and most will probably settle for using ordinary image maps.

Hair today...

Hair in XSI 3.0 is about as good as you can get. You can groom hair using guide strands, and it's possible to get a fair approximation of what the hair will look like in the viewport in real time. Users can texture the hairs, use collision detection on them, and make them dynamic with relative ease. They can also copy styles from one character to another.

The new gradient shader simplifies the creation of some very complex textures, giving the opportunity to add as many colours as a user likes to a gradient, and manage them over the surface of their objects. It's even possible to replace any of the colours with images (or other textures), so a single texture could contain snowy peaks, rock textures, grass, and sand. If a copy of the same gradient is used to displace the ground object, a quick landscape is created. Gradients are also useful when using the new particle tools.

Particle dynamics has been completely

re-written for version 3.0. Turbulence can now be introduced to particles, and users can deform them with any of the normal geometric deformers – even IK. Each particle can be selected and edited as an object in its own right. Mental-ray instances can be used to improve rendering times when using objects as particles. In fact, this kind of instancing can improve both rendering and viewport performance for ordinary objects as well.

There are also some new shapes for the camera-facing objects used to project textures when creating effects such as fire and smoke. These – especially when combined with the new gradient tool – improve combustion effects, but still aren't up to the standard of volumetrics produced by LightWave or Pyrocluster.

This is a big update to a big package. The character-animation and particle tools are probably the most significant

changes, although there are a number of smaller alterations that make modelling and animation tools more usable.

Real-time shaders will help games designers, and new motion-capture functions to record the movement of the input device and apply it to animated parameters will be useful for natural movements.

However, XSI's price continues to be higher than similar products being used to do similar jobs. That comparison looks set to be made more often as the market expands.

Christian Darkin

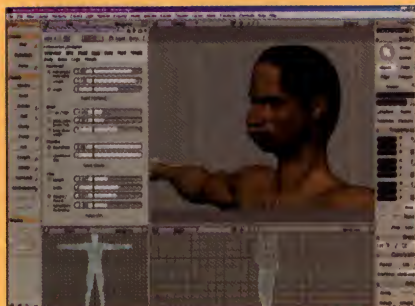
DIGIT RATING

A professional 3D tool with features tuned to match its price tag. The revamped hair tools, particle dynamics, and non-linear animation are truly welcome.



© DIMENSION FILMS/TROUBLEMAKER STUDIOS, 2002

WALKTHROUGH



Users can create new characters very quickly in the same way that they can in Curious Labs Poser. The facility to do this has been created entirely within XSI, and if you want to, you can build similar tools yourself. Here we want to add hair.



Build a basic human. The control window pops up to display various attributes. Here we can alter the man's face and body shape to produce the character we want. Next we select just the parts of the body we want to add hair to – in this case, the top of the head.



Hair is added using a dedicated menu. The hair guides can be combed to create whatever hairstyle we want. Hair guides can be lengthened or shortened at any position on the model. With a little work, extremely realistic styles can be produced.

DIGIT EXCLUSIVE

Digital Fusion
4.0

Desktop compositing suite

FORMAT: Windows
PRICE: £3,450;
 upgrade £340,
 DFX+ £690,
 Modules between
 £200 and £340.
 Prices exclude VAT.

COMPANY: Eyeon,
 eyeonline.com

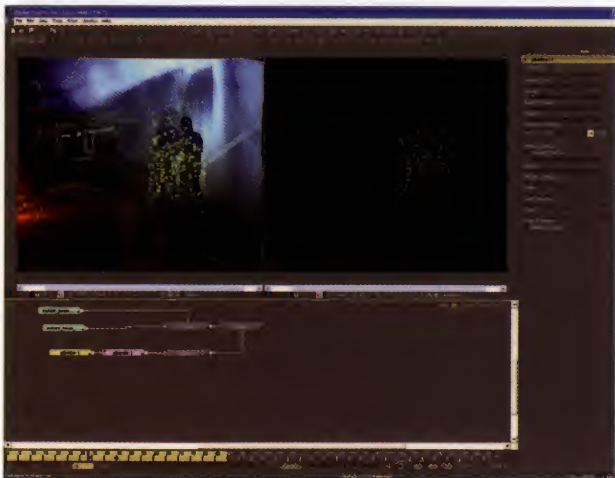
CONTACT Digital Rapids,
 01428 751 012

NEW FEATURES

- Floating-point colour-depth support.
- RAM cache for improved preview playback.
- Redesigned render manager with grouped networked slaves.
- Scale, Change Depth, Fast Noise, Erode/Dilate, Particle Image Emitter nodes.
- Grid Warp tool for 2D deformations.
- Integrated scripting system with TCP/IP network access.

Particularly powerful

The 3D particle engine is much better than Combustion's 2.5D system. In version 4.0, it has gained the ability to work directly from a source image.



Everyone talks about the market upheavals and price drops in the 3D market, but it's compositing that has gone through the greatest change in the past nine months. Apple's aggressive price drop of the Mac version of Shake to around £3,200, with rumours of a Final Cut Pro-priced version waiting in the wings, was followed by Discreet dropping the price of Combustion to a reasonable £960 (with Cleaner bundled).

It's into this arena that Digital Fusion 4.0 has been released – and it now shares a price with Shake. This full-spec, node-based compositor is available either as the full application or as DFX+, an 8-bit version with a standard backbone to which modules can be added for visual effects, keying, input/output, 3D tools, network rendering, paint, and particles.

Digital Fusion has suffered from a low profile in the UK, due until recently to a lack of distribution. However, the application has an excellent reputation worldwide. It's robust and reliable rather than full of flash, but that's why users want it. The oft-quoted story of Frantic Films compositing 550 layers to complete the opening sequence of the movie *Swordfish* shows that Digital Fusion is stable if nothing else. That isn't to say that it doesn't allow you to flex your creative muscles, but its main selling point is its efficiency at day-to-day compositing tasks.

The additional features found in Digital Fusion 4.0 are more about getting work done than glitz and glamour. The most important (now that the product is positioned alongside Shake) is support for floating-point colour depth, so clips will retain all the colour values of whatever a user does to them until the range of the final output is applied. This avoids colour information disappearing



Group specs

Users can group tools into a single, hideable block – making navigating complex composites much easier. The new Macro tool function improves this even more.

if a tool pulls it out of the standard colourspace and another pulls it back in. Working with floating-point colour puts a strain on the host processor and RAM, but Digital Fusion makes things faster and more usable by enabling the processing of different layers or branches of nodes in different colour depths.

Cache in hand

Digital Fusion 4.0's greatest speed improvement comes from the dynamic RAM cache. Previously, it kept only the current frame in memory – but now it can hold as many frames as the host computer's RAM can manage. This has been due for a while – even Adobe After Effects has this function – but Digital Fusion's system is adaptive, shunting cache resources around to address different priorities.

Linked to this is background rendering, which renders work and places it within the RAM cache whenever the CPU is idle. This doesn't use just the host machine. If Digital Fusion has networked rendering-slaves, these will be used. This happens whenever a work is altered, and can provide a huge productivity boost.

Network rendering uses the improved Render Manager. Rendering stations can now be organized into groups, and shared between them. To allow for the fact that most render farms are a mish-mash of old PCs, the network rendering system doesn't have to wait for one project to completely finish on all machines before starting the next – a nice touch.

The other major addition that makes the application faster is support for what

Eyeon calls concatenated transformations – where physical transformations of layers, such as scaling, rotation, and positioning, are applied only at the end of a sequence of nodes. According to the company, this improves the sharpness of the output image. It certainly makes rendering and previewing much faster.

Digital Fusion 4.0 also gains tools that make for faster working. Grouping tools together to make complex flowcharts easier to navigate was possible before, but version 4.0 boosts this by allowing the creation of macro tools. These allow regularly used groups of tools to be turned into a single tool, with only the required controls on show.

More powerful than this – though more complicated – is the new scripting language, DFScript. This is designed as an automation system for tasks such as format conversion, but can also be used for other tasks. For example, by using TCP/IP functions, it can control rendering stations or allow the Render Manager to communicate with other applications' network-rendering systems.

There are new creative tools and enhancements here, too. Most important among these is the Grid Warp tool – see the walkthrough (right) for more details. This features independent source and destination grids, both of which are animatable along splines. Other new tools include Scale, Change Depth, Fast Noise, Erode/Dilate, and Particle Image Emitter nodes, which fill in a few gaps in Digital Fusion's armoury.

Eyeon has also re-written Digital Fusion's tracker. It has combined the

Tracker, Stabilize, and Corner Positioner tools into a single node that can track multiple paths. This makes tracking faster, leaving the user with a cleaner flowchart. Stabilization has also been improved, with stabilized motion now supported.

Image cloning

There are many smaller enhancements within Digital Fusion 4.0, such as the mobile and rotatable splitter bar for viewing A/B split screens; independent preferences for individual projects; and the copy polyline paint mode for copy-&-paste image cloning.

Digital Fusion 4.0 also ships with a DVD of 'Courseware'—containing videos that explain the interface to new users, and materials for the printed tutorials. While the content is informative, the production quality is, frankly, appalling and amateurish. The videos are out-of-focus DV clips with bad artifacts and an unedited voiceover. Also, many of the links in the project files are incorrect. You may learn more about the product by working out how to fix the errors, but this is hardly the point.

Overall though, Digital Fusion 4.0 is an excellent improvement to an excellent product. The application can happily work with formats from DV to film, and features

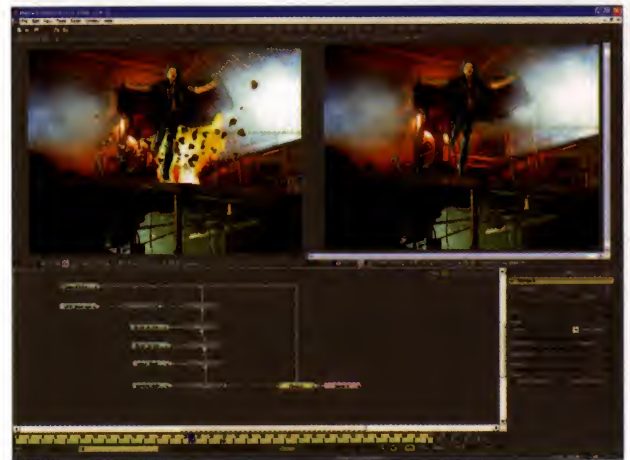
full toolsets in all of the major areas that a compositor should work in—including effects, rotoscoping, text, tracking, and even a full 3D particle system that kicks Combustion's 2.5D system into touch. The application as a whole is missing a full 3D workspace, but this can be added using Fusioneers' Gaia 3DF plug-in.

The compositor's open nature is another of its strengths. Not tied to a major post-production player, Eyeon is free to make deals with whomever it pleases—meaning there's a huge range of plug-ins available. The application can also use a wide range of video-capture hardware to boost video playback, with bundles including NewTek's Video Toaster already available.

If performance was everything, Digital Fusion would be a winner. However, price drops have left this mid-range package looking out of place next to the high-end Shake. And while it knocks the spots off Combustion, it's hard to justify the price. Even the complete £1,720 DFX+ bundle is almost twice the price of Discreet's tool.

We can only hope that in the New Year, everyone will have sorted out their prices, and that a lower-priced Digital Fusion 4.0 will justify the Best Buy it deserves.

Neil Bennett



Tracking moves

Eyeon has given the Tracker a complete overhaul. While not up to the standard of a dedicated application, it's good enough for most tasks.

DIGIT RATING

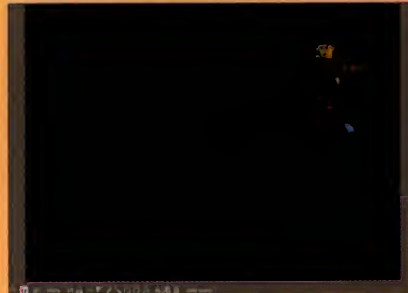


Digital Fusion 4.0 is an excellent, robust, and powerful compositing application that has been given a full and complete set of new features—but it looks overpriced.

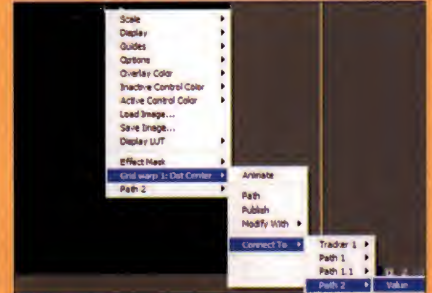
WALKTHROUGH



1. In this shot, we want to compress the actress as she teleports to another world. Add a Grid Warp node over the actress. It has two separate grids for greater flexibility.



2. Create a 2-x-2 source-grid. Select Edit Rectangle, and place the grid around the actress. Right-click on the grid centre marker, and select Grid Warp 1:Src Center>Path. Create a simple path for the grid.



3. Select the destination grid. Select the Copy Src to Dest button. The destination grid still needs to be attached to the path, so right-click on the grid centre and select Grid warp 1:Dst Centre>Connect To>Path 2>Value.



4. Select the source grid. Select Right-Click Here for Mesh Animation, and select Animate. Re-click and select Set Key. Repeat for the destination grid. Go to Spline Editor, enable One mode, and highlight Dst Grid Change.



5. Go to the frame that you want the grid-warping to start from. Move along the timeline, making the grid smaller as the actress disappears into the vortex, setting keyframes as with a standard resizing tool.



6. This is the final footage. If the square grid seems too linear, it can be manipulated with the mouse, which behaves like a magnetic control using a paintbrush-style head.

DIGIT EXCLUSIVE

Cinema 4D 8

Expandable 3D modelling tool

FORMAT: Win/Mac
PRICE: Standard, £390.64;
 XL, £1,105.53;
 Studio, £1,658.72;
 modules from
 £194.89 to £407.66.
 Prices exclude VAT.

COMPANY: Maxon,
 www.maxoncomputer.co.uk

CONTACT: Maxon,
 0500 224 660

NEW FEATURES

- Full suite of 3D modelling tools.
- Animation – with function curve for every animated parameter.
- IK and character animation.
- Particle systems.
- Attributes manager.
- Upgradeable modular system.
- Node-based automatic animation.

The idea behind the latest release of Cinema 4D is that its pricing should grow to reflect the user's needs, providing a basic package to which plug-ins or modules can be added to take it up to whatever level of sophistication you need and can afford.

The result, Maxon hopes, is a package that will appeal to those who have never touched a 3D package before, providing a quick and easy way into 3D design at the lower end, but which will still compete with Alias|Wavefront Maya, NewTek LightWave, and Discreet 3DS Max at the upper end. It's a tall order.

The advantage of this modular system is that even at the most basic level, you ought to get fully developed professional tools. Indeed, the standard Cinema 4D package offers solid basic design tools. NURBS are well served. The creation of objects is hierarchical, so users can add, modify, alter, and animate almost any property non-destructively. It's a fine system, and the Object Manager gives instant and intuitive control over everything, so users get to understand quickly how even complex models are built.

Modules

New in version 8 is the Attributes Manager. This simple tabbed window replaces the dozens of dialogs and controls that plague some other 3D packages. The Manager simply provides all the controls for the object you've selected, and lets you work with them all in one place.

The timeline has also been updated. It now features draggable keyframes, and function graphs for any animation. Users can also load sound into the timeline, so animations can be synchronized to a soundtrack.

If you'd rather automate animations than keyframe them, Cinema 4D has



About interface

You can configure the main interface in whatever way you want, and display your work in a number of different ways.

another trick up its sleeve: a Houdini-style procedural animation system. Xpresso is a node-based way of linking objects and animated functions together (see the Walkthrough below). It allows you to quickly set up automatic animations and relationships in a way that the mainstream packages allow only through scripting, or some other complex system. This is a powerful feature, and other manufacturers should take note.

Multi-pass animation is handled better than in almost any other package. Users can render the effects of each light to a different layer, or separate layers based on any number of other factors. Those layers can then be re-assembled as an Adobe Photoshop, or After Effects file for easy compositing.

On top of the basic system, users can add modules for specific tools: Mocca, Advanced Render, Network rendering,

Thinking Particles, Pyrocluster, Dynamic, and BodyPaint 3D.

Mocca offers advanced IK controls for £228.94. There's a decent IK system built into the main package, but Mocca takes it further. It introduces mouse motion capture – users can record the motion of the mouse (or any other device that can be controlled through Cinema 4D), and apply the results to any animated function.

Mocca also adds soft IK. Once users have constrained bones so that they only move in the correct ways, soft IK allows them to be given motion beyond those limits, but makes them progressively stiffer as the skeleton tries to bend. For example, toes might bend only through a few degrees, but will bend further if pressure is applied – if they're being walked on, for example). The resistance set up by forcing the bones moves other

WHAT'S ON OFFER

Standard edition

This is just the main package. This comes in at around the same price as Photoshop, encouraging those new to 3D to get started with Cinema 4D. This puts it into competition with Realsoft 3D (reviewed on page 50). It doesn't have the feature set of Realsoft, but the tools that are in place are more substantial and complete. It's also up against Discreet's Plasma, which has good strong tools, and powerful features, but it's designed for Web work, so its rendering resolution is restricted.

XL edition

This includes the Advanced Rendering, Thinking particles, Pyrocluster and Mocca modules. Its competitors in this price range, such as LightWave and Softimage3D, mostly have dynamics, and some offer unlimited networking, but XL's rendering and pyrotechnic tools are better than most.

Studio bundle

This contains everything and costs about the same as Maya Complete. The choice at this level comes down to how comfortable you feel with the product. The inclusion of BodyPaint 3D is a definite plus, but many 3D-artists feel that Maya's subdivision tools have the edge.



bones, and creates a more realistic skeleton. A welcome result of this system is that secondary animation becomes automatic – wobbling and swinging motions happen by default if a user sets up a skeleton correctly.

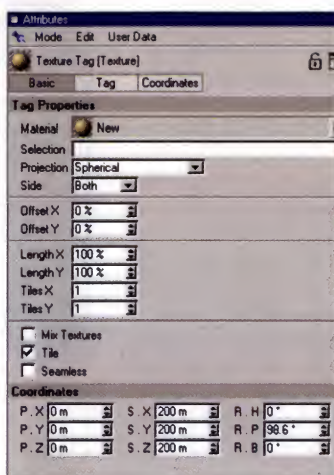
The £280 Advanced Render module adds radiosity and caustics to the renderer for more realistic images. You can't bake radiosity into textures, as you might want to do if you were designing the sets for a video game, but there's an extremely accurate depth-of-field tool (which even takes the shape of the camera lens into consideration, creating blurred highlights), and the caustics are volumetric.

Meet rendering

Network rendering does exactly what it says on the tin. You can buy one licence for an unlimited number of rendering machines for £280, or buy packs of three (£169.36) or ten licences (£220.42).

Thinking Particles costs £228.94. There are particles on the standard package with basic functionality: they can be deflected, made out of any geometry (including metaballs for liquid simulations), and affected by gravity. Thinking Particles provides the user with much more control. The module uses the Xpresso interface, so users can plug any aspect of a particle into any function or calculation. Emitted particles can be sorted into groups by a range of criteria, and affected based on them. For example, it's possible to create a system that generates a flow of particles out of a tap based on handle rotation.

Pyrcluster, a great simulator for smoke and fire, is the cheapest of the modules at £194.89. However, it isn't quite up to the standard of LightWave's volumetrics, and is rather slow at rendering. It does feature a preview window, though, and a much faster post-effect rendering option for quick results.



Attributes

The attributes window shows selected objects, collecting all their controls together.

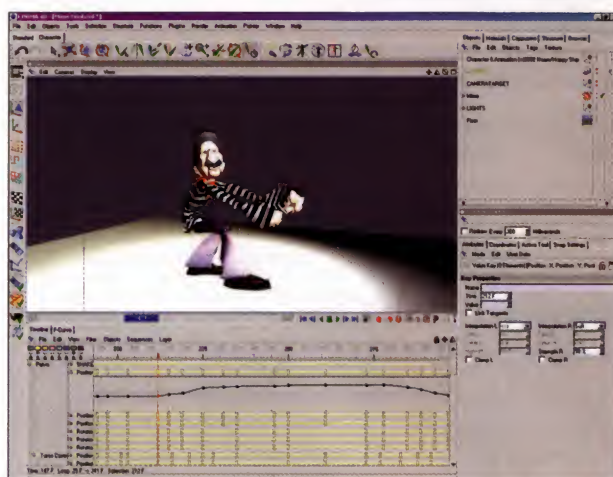
The £280 Dynamics plug-in is pretty standard, offering soft- and hard-body dynamics, including cloth, and various other tools. Unfortunately, Cinema 4D's dynamics tool isn't compatible with Havok, so you can't export it for Shockwave work.

The BodyPaint 3D module, at £407.66, isn't any cheaper than the standalone version, though it is more integrated into the host application. It's one of the best 3D painting tools around, featuring a range of natural and not-so-natural brushes with which to paint the bump, secular, image, opacity or any other kind of texture on your object.

What makes this module a real winner, however, is the ability to paint directly onto a rendered version of an object in real time. You can paint bump maps and see their result, or paint opacity – rubbing through the object so that objects behind become visible.

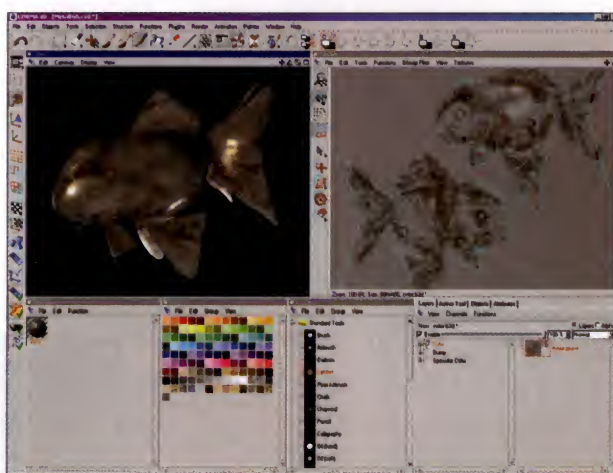
All prices in this review exclude VAT.

Christian Darkin



Character animation

The Mocca module adds extra character animation and IK features, but the new timeline with its animated function curves is available in the basic package.



DIGIT RATING

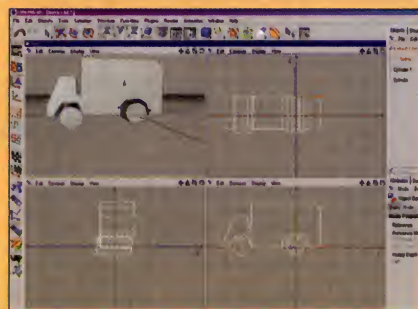
Cinema 4D 8 gives users a 3D suite with a powerful and expandable modular system that aims to appeal to everyone, and which largely succeeds.



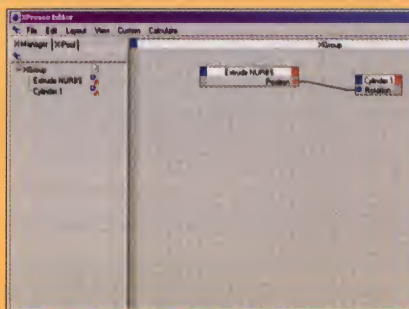
Render-painting

The BodyPaint plug-in allows you to paint directly onto a rendered version of your object.

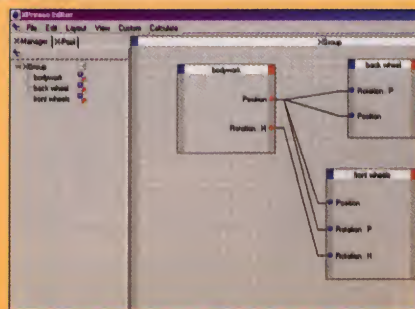
WALKTHROUGH



Here we're building a model bus. We want to automate the rotation of its wheels so that when we animate the body, the wheels spin on their own. Cinema 4D's Xpresso interface makes light work of it.



Drag the chassis and the back wheel into the Node editor. Add a position output to the chassis, a rotation input to the wheel, and connect them. Add a position input to make it move laterally with the chassis.



Add the second wheel, and use the same tools on it. Now add a control to make the front wheels steer. Users can add extra nodes to use maths on any variable, or add other parameters into the calculation.

■ **DIGIT EXCLUSIVE****RX875HT**

High-end 3D workstation

FORMAT: Windows
PRICE: £3,199 plus VAT
COMPANY: Armari,
www.armari.co.uk
CONTACT: Armari,
 020 8993 4111

Storm 3

High-end 3D workstation

FORMAT: Windows
PRICE: £2,995 plus VAT
COMPANY: Max Black,
maxblack.co.uk
CONTACT: Max Black,
 01753 245 757

Chipsets are never going to set the world on fire. However, the new architecture announced by Intel in the middle of November boosts power and speed across processors, graphics, peripherals, and connectivity. First to feature it in the 3D workstation market are new units from Armari and Max Black.

The Intel E7505 chipset enables the use of single or dual Xeon processors up to 2.8GHz, with both units including the top-of-the-line chips. So as not to throttle these, the front side bus speed has been increased to 533MHz (from 400MHz), boosting overall throughput. The Xeons support hyperthreading, a technology introduced earlier this year. Hyperthreading turns each chip into two virtual processors – so our two machines appeared to have four processors to Windows XP.

The downside is that, to get any benefit from hyperthreading, applications must be modified. NewTek LightWave is the only mainstream 3D suite that can obtain serious performance increases from it: it cuts rendering times by up to 40 per cent when used correctly. There was no change in Adobe Photoshop performance, though. Some applications, especially video tools, even run slower – though hyperthreading can be turned off in a computer's BIOS. Both manufacturers

will enable or disable the technology depending on your needs and choice of application.

The E7505 chipset also enables AGP 8x connections between motherboard and graphics cards, which allows the two to communicate twice as fast as with the previous AGP 4x standard. New graphics cards have been created to take advantage of the speed jump. Our test Storm 3 featured the new Fire GL X1 from ATI, while the RX875HT arrived with PNY's Quadro4 980 XGL, which adds AGP 8x support to boost the AGP 4x Quadro4 900 XGL. Our tests showed little difference between the two cards, both of which feature 128MB of DDR RAM – though the Fire GL X1 has the added bonus of being able to output true 64-bit colour.

The chipset enables the motherboards on both machines to provide onboard USB 2.0 and Gigabit ethernet, removing the bottlenecks of having them on PCI cards. It also adds support for the next generation of PCI interfaces, PCI-X. The chipset supports only a single, 64-bit 133MHz slot, plus two 64-bit 100MHz slots, with both workstations supporting two standard 32-bit 33MHz slots.

To gain the speed benefits of PCI-X, you'll need to use PCI-X boards. Normal PCI boards will not receive a speed boost.

The Storm 3 uses a Tyan Ultra 320 SCSI-enabled motherboard, while the RX875HT has a Supermicro IDE-only board. Backing these up are a fast Seagate 36GB, 10,000rpm hard drive on the Storm 3; and a huge 180GB IBM hard drive on the RX875HT. Most users with



Evenly matched
 Left: Armari RX875HT
 Below: Max Black Storm 3

the funds and needs for a dual 2.8GHz system will probably want the speed benefits of SCSI.

Armari has the better case design, for both aesthetics and practicalities. With Max Black, you have a choice of black or beige, but the RX875HT turned up in a metallic blue sheen than drew envious glances. More importantly, the RX875HT has more bays: four 5.25-inch and two 3.5-inch external bays, plus five internal 3.5-inch bays. The Storm 3 has three 5.25-inch external bays (plus a dedicated floppy-drive bay), and four internal 3.5-inch bays.

Other differences include 2GB of EEC DDR RAM on the RX875HT to the Storm 3's 1GB. Both test systems had four of their RAM slots filled, but the RX875HT has two more free. Max Black states that a shipping unit would have used two 512MB RAM modules and left two free. Armari will charge extra for the privilege. The RX875HT has a better set of peripherals, including a Pioneer DVR-A04 DVD-RW drive – which will be replaced by Sony's DVD±RW DRU-500A combo drive in shipping units – and a top-notch Soundblaster Audigy 1394 soundcard, which also adds FireWire (the Storm 3 has this integrated on the motherboard).

Apart from the difference in RAM, there is little between these two systems. Both are well priced, with the RX875HT winning on features, and the Storm 3 providing the best base for the future.

Neil Bennett

DIGIT RATING**RH875HT**

Top-rated Pentium Xeon chips, lots of RAM and an excellent set of peripherals combine to create a worthy successor to the RX860HT.

DIGIT RATING**Storm 3**

The Storm 3 offers an excellent core system with the same technologies as the RH875HT, plus Ultra 320 SCSI and a fast hard drive.

NEW FEATURES**ARMARI RX875HT**

- Dual Intel Xeon 2.8GHz processors.
- 2GB 266MHz ECC DDR RAM.
- PNY Quadro4 980 XGL AGP 8x graphics card.
- 180GB Ultra ATA/133 7,200rpm hard drive.
- Pioneer DVR-A04 DVD burner.

MAX BLACK STORM 3

- Dual Intel Xeon 2.8GHz processors.
- 1GB 266MHz ECC DDR RAM.
- ATI Fire GL X1 AGP 8x graphics card.
- 36GB Ultra 320 SCSI 10,000rpm hard drive.
- Lite-On CD-RW drive.



SPEED TEST

Speed test: Armari RX875HT versus Max Black Storm 3.

Armari's RX860T was previously our highest-rated machine – see **DIGIT** 45 Labs test for more details.

Adobe Photoshop

RX875HT	48s
Storm 3	1 min 20s
RX860HT	1 min 43s

NewTek LightWave

RX875HT	17 mins 33s
Storm 3	17 mins 43s
RX860HT	21 mins 46s

Results are in minutes and seconds. Shorter bars are better. The Photoshop 7.0 test performs 20 actions on a 75MB image – including filters and transformations. The LightWave 7.5 test uses the Tracer - Radiosity.lws file, included with the application, with the resolution multiplier raised to 50 per cent (from 25 per cent) to test the response to complex scenes and long-term stability. A single frame was rendered using four threads – the same number of virtual processors in each hyperthreading-enabled workstation.

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Motionbuilder 4.0

Powerful character animation

FORMAT: Mac/Win
PRICE: £2,395 plus VAT; maintenance £479 per year
COMPANY: Kaydara, www.kaydara.com
CONTACT: Blue Graphics, 01483 688 000

NEW FEATURES

- Real-time character animation.
- Forward and inverse kinematics.
- Facial-animation tools.
- Non-linear editor for blending motions.
- Take motion from pose libraries, keyframing, or motion capture.
- Export for real-time 3D playback in QuickTime player.

Motionbuilder is a character-animation tool that takes 3D characters from any of the main 3D applications, and lets users manipulate them to create and edit detailed animations for use in rendered and real-time projects. Its major advantage is that users can watch and animate characters in real-time throughout the process.

The application can import and use characters and models from a range of products including Alias|Wavefront Maya, Discreet 3DS Max, NewTek LightWave, and Softimage, complete with texturing and weight mapping. As long as they're bipeds, it's a simple matter to map characters onto the Motionbuilder character rig, which is automatically set up with forward and inverse kinematics. It also features floor contact helpers that allow users to set, and animate, the ground position for each part of the foot, so that feet can be dragged around without going through the floor.

Motion capture

Motion-capture data can be brought in, and users can add keyframed animation to characters. Once added, the animation routines can be cut, pasted, and edited using a non-linear editor. Users can even cut-&-paste parts of an animation block – to remove a few moves from the middle of an animation, for example. There are also excellent tools for blending animations together, and for anchoring body parts so that characters don't slide around when moving from one animation to another.

Users can add extra animation on top of a motion just as in Softimage|XSI, and any part of the animation can be moved around without affecting the whole. This is particularly useful when working with complex movements such as motion-capture data.

Weighted constraint animation allows users to transfer objects in a scene from



Strength of character

Character animation is performed in real-time, along with textures, video backdrops, and even particle effects such as smoke and flame.

one parent to another. It's easy to have characters pick up or put down objects, or transfer them from one hand (or one character) to another, for example.

Version 4.0 adds full drag-&-drop support, making it easier to work with characters, cameras, lights, and so on. There's also a new Asset Browser window that gives access to all the Motionbuilder elements, but that also allows folders to be added from your computer, so users can pull in files from disk just as easily.

The new Pose Controls window creates poses for the character rig in much the same way as Curious Labs' Poser. It can build libraries of poses, transferring them from one point in the animation to another, or between characters. Mirroring and partial posing allow the modeller to, for example, copy hand gestures from one hand to another, or import posing just for the upper body without affecting the legs.

Version 4.0 also sees updates to Motionbuilder's facial-animation tools: users can now create faces made from multiple clusters. Support for automatic lip-syncing from audio files has been improved. The program makes it easy to add background scenery, as well as real-time effects such as particles and video, and it does so without sacrificing real-time playback.

There's also a new plug-in for the QuickTime Player that lets anyone view Motionbuilder 3D files with all their textures, embedded video, and effects.

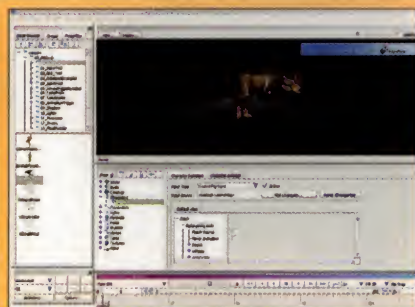
Christian Darkin

DIGIT RATING



An excellent character animation tool that is compatible with all major 3D packages. Motionbuilder concentrates heavily on humanoid body-shapes.

WALKTHROUGH



Here we're animating a pre-constructed character using the new Pose Control window and the animation editor. Import a character and drop the Motionbuilder actor rig onto it so that it can be worked on.



Position the character's bones to build a library of the poses we'll need in our animation. Each pose is saved, and can be used as a whole, or just on parts of the character.



Using the poses, we can create several takes – or short sections of animation. Each of these appear as animation blocks on the timeline. We can now cut-&-paste these to create a longer animation.

MX700

Cordless optical mouse

FORMAT: Mac/Win
PRICE: £51 plus VAT
COMPANY: Logitech,
www.logitech.com
CONTACT: Logitech,
020 7309 0127

NEW FEATURES

- Seven buttons plus clickable scroll wheel.
- RF wireless control up to 30 feet from base station.
- Base station doubles as recharger for batteries.
- Tracks at 4.7 megapixels per second.
- Bundled MouseWare software.

MX700 may sound like the name of some exotic testosterone-driven sports car. It actually belongs to Logitech's Lamborghini of a cordless optical mouse – a precision instrument that offers the finest level of creative control, and is the first to offer rechargeable batteries.

The only thing missing from the shipping unit we tested was that new car smell – and a left-handed grip. The right-handed mouse is loaded with hot-rod features. Aside from one minor glitch (more on that later), it provided an exceptionally smooth ride.

Charging up

The MX700 comes with a rapid-charge base station in which the mouse is docked when not in use. Logitech says a ten-minute charge keeps the mouse going all day, and six to seven hours of recharging

gets you ten days of service. Maybe I work too hard or too many hours, but in my experience, a night's charge netted five days of run time.

The base station eliminates the need to replace standard batteries every three months; however, the MX700's true strength lies in its performance. The fast RF wireless control worked well at up to 30 feet away from the base station (no line-of-sight positioning required).

Besides the regular two left/right buttons and a scroll wheel on top, Logitech provides three sets of user-customizable buttons. Two buttons offer a unique system for continuous scrolling; two thumb-control buttons let you move forward or back through Web pages; and finally, the Quick Switch Program Selector cycles through active programs and documents.

All these functions make on-screen navigation quick and easy. The optical engine tracks at 4.7 megapixels per second – about three

times as fast as most optical mice – affording smooth and precise cursor control. After using this, you'll wonder why you ever put up with the clunky, leashed device that came with your Mac or Windows PC.

The one glitch I experienced arose when I installed the Logitech MouseWare software on a PC that had an earlier version of the program. A conflict caused my PC to crash severely (Logitech is looking into the problem). To be safe, remove previous software before installing this new version. On the Mac, there were no such problems.

Like most luxury items, the MX700 doesn't come cheap. At over £50, it may well be the most expensive mouse on the market. But as with a fine Italian sports car, you get what you pay for; if you want the power that truly precise control can deliver, the price is well worth it.

Michael Lasky

DIGIT RATING



The best cordless mouse on the market: flexible, rechargeable, and offering the level of precision a designer requires – though it's also the most expensive.



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Ventura 10

DTP powerhouse for Windows

FORMAT: Windows
PRICE: £552 plus VAT; upgrade, £194 plus VAT
COMPANY: Corel, www.corel.com
CONTACT: Corel, 0800 581 028

NEW FEATURES

- XML import support/XML Mapping Editor.
- Table tags.
- Integrated preflight engine.
- Publish-to-PDF capabilities.
- In-RIP trapping options.
- Support for than 30 picture file formats.
- Ability to control horizontal and vertical resolutions of picture files.
- 50 new bitmap effects.

Ahe original desktop publishing package for IBM PC, Ventura lost ground over the years to strong competition from the likes of PageMaker, QuarkXPress, and now InDesign. Despite Corel's takeover of the product a few years ago, the ailing giant continued to lose market share, but a new version, four years in production, looks set to reverse this. Ventura 10 consolidates all of its strengths for professional publishing and adds XML import and PDF export.

Ventura 10 is still a beast of an application, weighing in at 250MB for a full install. It's also still a challenge to master. Although Corel has added icons on the menu bars, presumably in an attempt to add a more intuitive feel to the interface, the result is just more clutter. Having to distinguish from lots of slightly different icons makes the program seem even more complex. That said, version 10 extends the options for customizing your interface and commands to suit the task in hand.

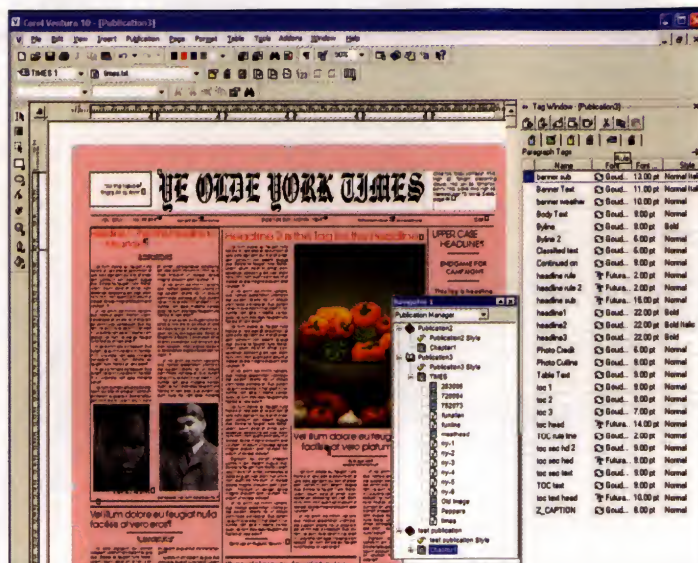
Ventura's handy Navigator is still here, letting you easily switch between multiple publications, drag-&-drop elements, and view and create indexes, tables of content and page tags.

Tag team addition

Tags – Ventura's answer to the stylesheets and master pages of other DTP packages – have been extended to include tables. You can specify every aspect of a table's design including fill and outline properties in a tag – making it a snap to create multiple tables that share the same formatting.

Ventura's graphics support is more encompassing with over 40 import filters and over 30 export filters. Once embedded in Ventura, a bitmap's orientation, size, resolution, colour mode can be changed and you can apply one of the new special effects such as blur or distortion.

Several welcome improvements have been made to Ventura's output capabilities.



Interface issues

Ventura's interface has seen little change, the excellent Navigator palette is still a key feature.

An integrated preflight option means that potential errors can be quickly spotted and corrected, In-RIP trapping parameters can be specified when outputting to PostScript 3 devices, and a new Prepare for Service Bureau command collects all fonts and linked files.

More importantly, the application can now export to PDF. Ventura's previous option for commercial print output was its EPS format, which often caused problems for service bureaus. Ventura doesn't output in the latest Acrobat 5 format, but the Publish to PDF command raises its game and will please users who don't already have Distiller for this purpose.

Corel is headlining XML support as the main new feature of this version, along with the new XML Mapping Editor, which lets users translate DTD (Document Type Definition) rules into Ventura tags. Once the mapping is set up in the editor, a style-free XML file is automatically

converted to a fully-formatted document in Ventura – a boon for users in large organizations that need to repurpose a wide variety of content. The only drawback is that Ventura only supports XML import – you can't edit the XML file or export as XML. Users that need this capability will need to invest in an XML authoring application such as Corel XMetaL.

The new additions to version 10 are all welcome but it's still Ventura's existing strengths that impress the most – its long-document handling, sophisticated typographics, formatting and layout control and customization.

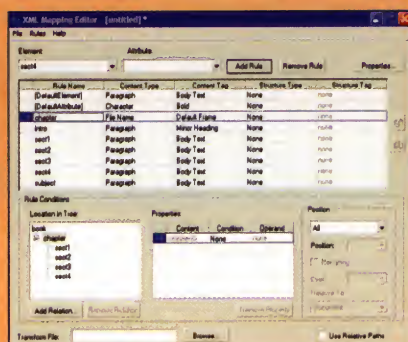
Lynn Wright

DIGIT RATING



Version 10's new features may not guarantee Ventura's ability to recapture lost ground, but they're strong additions to this powerful, all-round desktop publishing system.

FEATURE FOCUS



It may not offer a complete XML workflow but the XML Mapping Editor makes light work of converting an XML file.



Multiple table creation is now easier with the new Table Tag – the Table Tag Properties palette lets you fine-tune attributes.



You can now specify trapping parameters in advance with support for In-RIP trapping options for PostScript 3 output devices.

DIGIT EXCLUSIVE**Evo N800w**

Lightweight mobile workstation

FORMAT: Windows
PRICE: £2,281.52 plus VAT
COMPANY: HP,
www.hp.com/uk
CONTACT: HP,
 0870 241 148

NEW FEATURES

- Slimline case design.
- 2.2GHz Pentium 4-M processor.
- 512MB of DDR RAM, expandable to 1GB.
- ATI Mobility FireGL 9000 graphics chip.
- 15-inch, 1,600-x-1,200-pixel LCD screen.
- 60GB hard drive.

For the uninitiated, a mobile workstation is a laptop based around a scaled-down version

of a workstation-class graphics card – such as NVidia's Quadro4 Go series – aimed at users who need to work on or present professional-level graphics on the move.

Most manufacturers have complemented the graphics with every power-feature available, producing heavy notebooks that are a pain to travel around with. The Evo N800w, HP's first foray into this expanding market, has attempted to rectify this, dumping older technology such as a floppy drive and show-off stuff such as multiple optical drives in favour of a more streamlined approach. The N800w is nearer in size and weight (2.73kg) to the kind of laptop design we'd all rather be using – Apple's PowerBook G4 (2.45kg) – than a brick like Dell's Precision M50 (3.59kg all-in).

Even though it's small and light, HP hasn't skimped on the power of the N800w. Our test machine featured a 2.2GHz Pentium 4-M processor – the fastest currently available – along with 512MB of 266MHz DDR RAM. This can be expanded to a maximum of 1GB, pretty much in line with the other mobile workstations available. The 15-inch UXGA screen has a top resolution of 1,600-x-

1,200 pixels, though it seems smaller than that found on other systems.

What makes this a mobile workstation is the ATI Mobility FireGL 9000 graphics chip. This has 64MB of DDR RAM and, like the latest generation of ATI's graphics cards, is capable of producing 64-bit colour. It isn't possible to see this on the N800w's LCD screen, but connect an external CRT, and the extra colour depth is apparent. As you'd expect from a workstation, the N800w is also certified for all of the major high-end creative applications – from Avid Xpress DV to Adobe After Effects and NewTek LightWave.

The unit also features a 60GB hard drive; a DVD/CD-RW combo drive; an excellent set – for a laptop – of JBL Pro speakers; both a sensitive touchpad and a pointer; two USB ports (though USB 2.0 ports would have been better); and a 3.5 hour battery life – long for a mobile workstation.

In our tests, the N800w performed as expected from a 2.2GHz/512MB machine, rendering our test LightWave scene in 42



minutes, not too much faster than the 45 minutes taken by the 1.8GHz/512MB Dell Precision M50 – but I know which one I'd rather take on the road.

Neil Bennett

DIGIT RATING

Easily as powerful as its larger and much heavier competitors, the Evo N800w, with its slimline case design, is the first truly mobile workstation.

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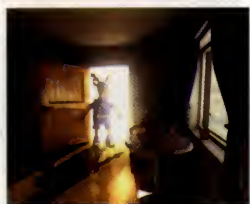
Realsoft 3D 4.5

Low-cost 3D-creation tool

FORMAT: Win/Linux/Irix
PRICE: \$700; upgrade, \$150
COMPANY: Realsoft,
www.realsoft.com
CONTACT: Realsoft
 003 583 471 8390

NEW FEATURES

- Full suite of 3D modelling tools.
- Extensive animation tools.
- Radiosity and caustics rendering.
- Basic hair tools.
- Full IK and footstep-driven character animation.
- Basic hard-body dynamics simulation.



Illuminating experience
 Global illumination and post-production light effects – things we aren't used to in a product at this price.

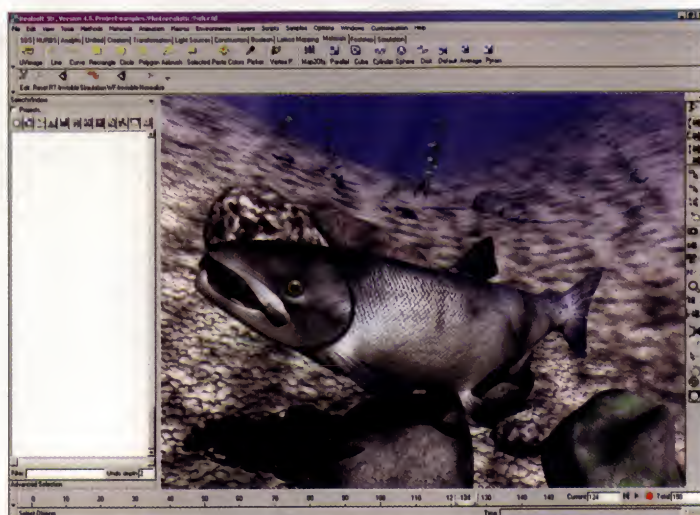
As a 3D design and animation package, Realsoft 3D covers all the ground you'd expect from a reasonably high-end package. However, it aims itself at those less familiar with 3D work, as well as at the professional – so it covers that ground a little more thinly than some other products. For example, hair, global lighting, glows and lens effects, and footstep-driven character animation are all supported, but they aren't as complete or comprehensive as in some packages, and they often aren't as flexible as they could be.

That said, the basic modelling and animation functions are strong. All animatable functions have interactive graphs for easy keyframe editing. The package contains its own scripting language for anyone who wants to write new materials, or add their own automatic animation controls, or extra tools. If users want to write code for Realsoft, they'll find it a lot easier with version 4.5's JavaScript, although most probably won't ever touch it.

Dynamics are easy to set up, with collision detection and gravity ready to use, and you can even have soft objects that deform when they're hit. Fluid dynamics mean that if an object's weight is unevenly distributed, then that will be taken into account when it's hit. Particle systems are easy to set up – they can even be painted onto the screen – but they're treated just like any other object, and can be animated and modified in the same ways. This takes a bit of getting used to, but makes for versatile particles.

Lights and modelling

Rendering – particularly network rendering – has improved significantly. It's easier to render through firewalls and over the Internet using Realsoft 4.5. Users can also organize render farms more efficiently.



User interface

The main screen is well organized, with tabs along the top, and a hierarchical list of scene elements down the side.

Displacement mapping for subdivision surfaces and NURBS is supported, and caustics have been introduced to the renderer. There's also better handling of lens flares, glows, and post-processing effects. Point lights can now use shadow mapping (which usually reduces their render time significantly), and global illumination has been improved.

The brand new "Construction" tab offers some new modelling tools based on the idea that a complex object is really just a simple object with a series of constructors attached to it. For example, to create a bent pipe, first build a pipe, then apply a bend constructor to it. The advantage is that users can go back later and adjust the bend. This isn't new in 3D by any means, but the intention is to spread the philosophy throughout the package in subsequent releases.

The idea is a sound one, and it's already been added to the skeleton tool with excellent results. Other tweaks

to the bones functions make working with and weighting skeletons a little easier.

Version 4.5 streamlines an already strong package. It doesn't quite allow the package to compete with its more expensive brethren, and anyone who can afford it will probably want to go for a package such as NewTek LightWave.

That said, Realsoft 3D has a range of features that isn't available anywhere else in this price bracket – and if you want a package you can learn quickly, but which will be able to make a good stab at pretty much any project thrown at it, it's well worth a look.

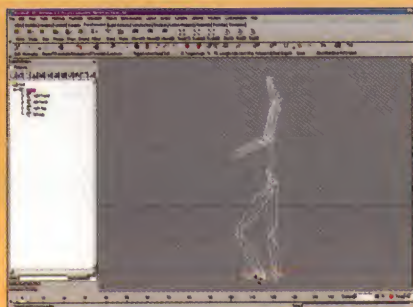
Christian Darkin

DIGIT RATING

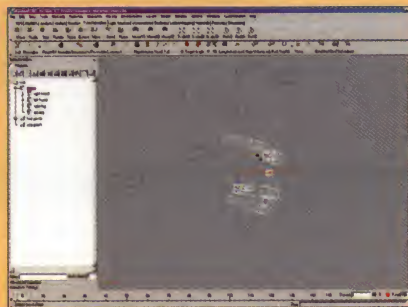


Strong features and an easy learning curve give Realsoft 3D an edge over its immediate competition, but more expensive programs are coming down in price to meet it.

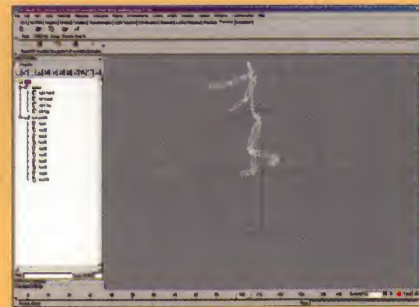
WALKTHROUGH



Rather surprisingly for this level of package, Realsoft 3D 4.5 has a footstep-based animation tool. It works with skeletons with any number of legs, but we're using a traditional biped.



First, create your skeleton. Add IK to the bones, and create limits so it will move realistically. Footsteps are rotated as the character changes direction, so users can easily make it walk around corners.



Connect the skeleton to the footsteps. Foot placement determines which bones are considered part of the feet and which aren't. Results aren't perfect, but as a quick solution to a complex problem, they're a good start.



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ImageZoom 2.0 Professional

Web-slideshow authoring

FORMAT: Mac/Win
PRICE: £269 plus VAT
COMPANY: Scalado,
www.scalado.com
CONTACT: QBS Software,
 020 8733 7128

NEW FEATURES

- Converts collections of digital images to Web slideshows.
- Automatically generates links and transitions.
- Simulated zooming views.
- Text and captions change with images.
- Exports HTML pages with scripts and URLs.

ImageZoom 2.0 from Swedish developer Scalado is a Java or Flash Web-site image-authoring system that can quickly set up a 'slideshow' sequence of linked images with a choice of transitions, views, and contextual text changes.

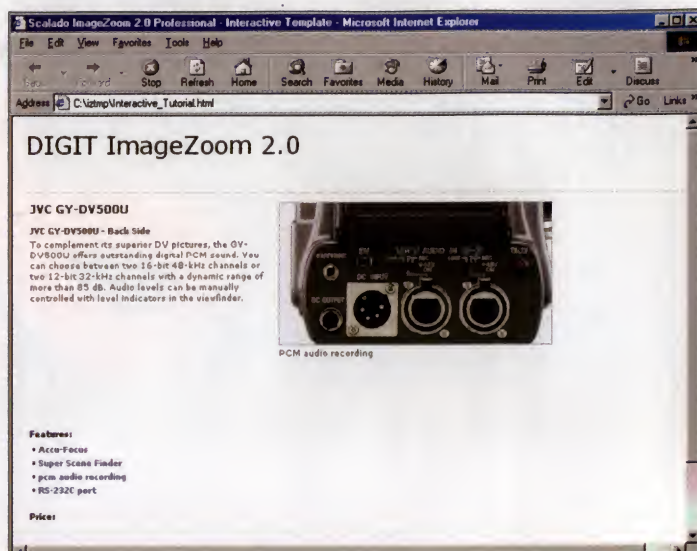
It can import high-resolution originals, and then interpolate and re-save them at Web resolutions for fast downloads. imageZoom is also well suited to the emerging market for next-generation mobile phones and PDAs with low-resolution screens and minimal-bandwidth connections.

The clever bit is that you can zoom smoothly into small, predefined areas within each image to see more detail. Hotspots and arrow navigation buttons are generated automatically, but you can also set up text menus.

A typical application might be a sales Web site for a car or (as here) a camera, with shots taken from each side, front, and back. Arrow keys navigate between them, with a transition effect that simulates 3D rotation (other transition options are slide, flip, and fade). When you click hotspots in the images, the view zooms, and the relevant caption appears. Text menus can jump you straight to views elsewhere – it's intriguing to watch the image automatically zoom out of the current view, rotate around several images, then zoom into another detail.

Setting up a basic multi-image and zooming sequence is easy, though switching between the Zoom and Navigation windows is tedious, and filling in all the link, text and data fields accurately is fiddly if you're including dynamic captions and menu links. There's a preview window for quick tests, or you can preview in a Web browser.

Original images all have to be exactly the same size. Zoom views are created by dragging a selection over the part of the



Zoom with a view

Once exported as an HTML page, you can zoom smoothly into areas (such as this lens), or transition between images.

image you want to enlarge – this is the same shape as the parent image, but can be a different orientation, so the image rotates as it zooms. Hotspots display as outlines, and can be linked to other images or URLs. You can optionally apply a second 'image mask' overlay.

Learning the basics is easy, though you'll have to set aside some time to give the manual a careful reading. There's a tutorial and a set of seven HTML templates with JavaScript to get you started. The manual assumes that you have a good familiarity with the inner workings of HTML and JavaScript.

A project is exported as an HTML page; JPEG files for each view; and the Java viewer or .SWF file. You can optionally publish a project via FTP to a remote server.

ImageZoom 2.0 introduces Mac OS X compatibility, though my copy refused to

load original images of four megapixels and above – curiously, the Windows version didn't have this problem. The Windows version can link to databases (any ODBC), and an example Access database is supplied to run through a Microsoft IIS Web server.

ImageZoom 2.0 isn't the only zooming program on the market, and it isn't perfect, but it does provide a quick and easy way of publishing collections of images with sophisticated effects. Scripting experts should be able to really make it fly.

Simon Eccles

DIGIT RATING



Web-authoring tool for interactive image slideshows with transition and zooming features. Automatically generates small files for speedier downloading.

WALKTHROUGH



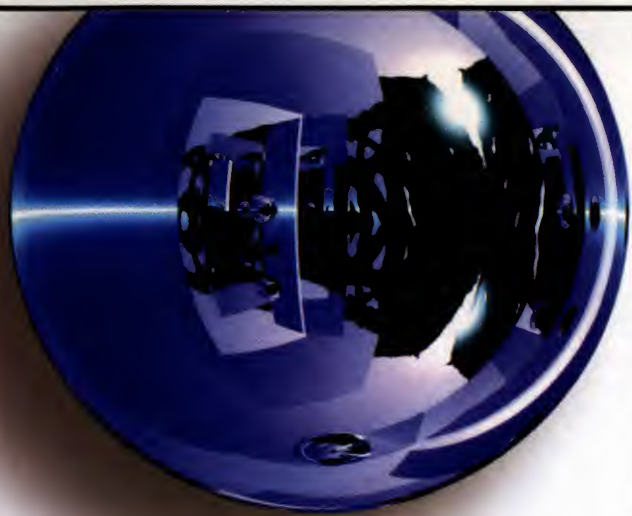
To set up a new project, import images using the Navigator window to set the 'slide' order. Links appear as arrow buttons in the final Web page.



Each original image is interpolated down to the display width you choose for the final Web page – all images will be the same size and alignment.



Select smaller areas within each main picture to display a zoomed view. The sub-window here is for setting up scripts for the views list, which are picked up by the HTML template.



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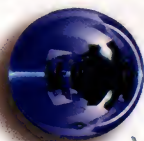
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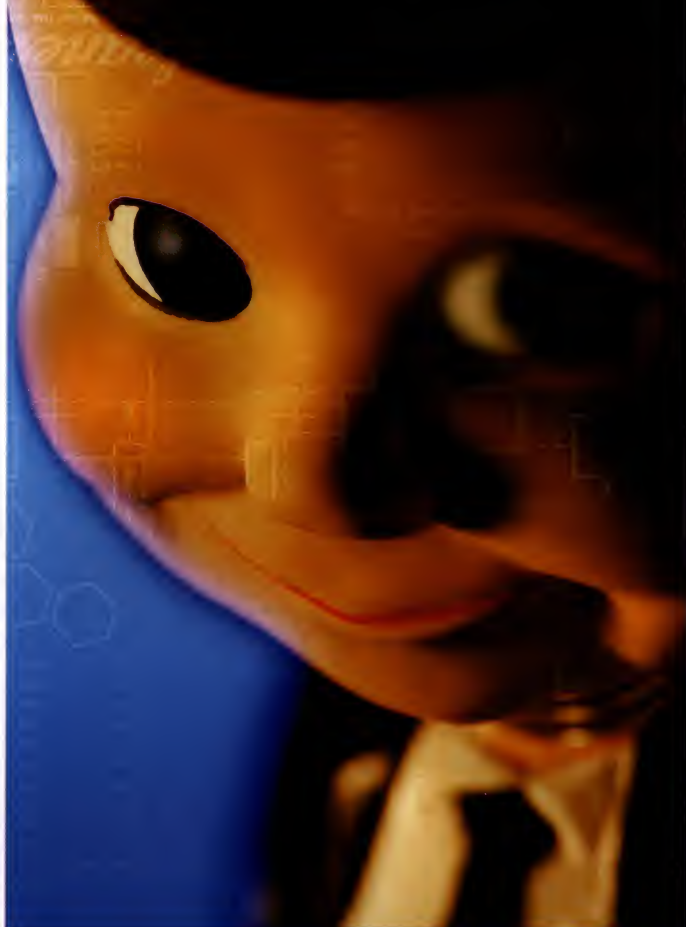
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Colour Confidence

Colour-management tool

FORMAT: Mac/Win
PRICE: £395 plus VAT
COMPANY: TypeMaker
typemaker.co.uk
CONTACT: TypeMaker
0121 604 1234

NEW FEATURES

- Entry-level colour management.
- Monitor-calibration tools.
- Accurate ICC profile for printing presses.
- Profile preview and exchange tool.
- Excellent explanations of colour for print.



High profile

The Pantone Spyder (above) is included for calibrating your monitor. What Profile? (below) shows the effect of different profiles on an image.



Colour Confidence is a get-you-started package for people who need to control colour for print.

Printing companies are increasingly shifting to all-digital operations – and to get the best prices, their customers have to do the same. The snag is that this has put the onus of initial colour-management onto the designer or publisher, who won't necessarily have the technical training or experience to do it.

Birmingham-based TypeMaker is a long-established specialist in colour-management, and is pitching Colour Confidence as an introductory package together with clear instructions for this emerging market.

The package includes tools for calibrating monitors, analyzing, and where necessary, replacing ICC colour profiles within image files. Just as important are the well-written explanations in printable PDF format. One document explains how to set up your system's monitor and CMYK profiles, and how to use profiles within Adobe Photoshop. The other is a comprehensive but admirably plain-English explanation of colour and colour-management for print.

Colour Confidence is a bit basic – it's the entry-level to a whole range of pricier systems and services offered by TypeMaker. There are no targets or tools for calibrating and profiling your scanner, for instance – though this isn't vital, as most decent scanners supply these as standard. Automatic printer-calibration hardware and software aren't included either – these are expensive, so most people use third-party profiling services rather than buying their own kit.

However, Colour Confidence includes a printer test file and matching pre-printed sample sheet for judging results by eye. We reviewed this package in its original form, with a Sequel USB



Colour contrast

The Repro Pack module supplies files for this image, plus a pre-printed sample for comparison with your screen image or desktop proofer.

Colorimeter for monitor calibrations, driven by ColorBlind Provelt! software. These only run in Classic mode on OS X Macs, though the rest of the package is OS X-native. As we went to Press, TypeMaker announced that it was switching to the Pantone Spyder colorimeter and PhotoCal software, native for OS X and Classic, as well as all versions of Windows from 98 to XP, for the same price. Early users can swap to the new device free of charge.

The meter is connected to a USB port and then attached to the front of the computer monitor. It has suction cups for CRT monitors, but it can be used with an LCD/TFT panel if you protect the surface with cling-film or similar.

The software and meter run a five-minute measurement routine, then calibrate the monitor (resetting it to an accurate Gamma and white point) and write an ICC profile that defines its colour-display abilities, so compatible applications can correct for it.

Embedding profiles

Less obvious, but rather important, is the inclusion of an excellent CMYK colour-separation profile that's tuned to simulate the European standards for litho printing presses. You can use this to simulate press results on-screen (and it looked more accurate than the standard Photoshop profiles to me), or you can use it when converting RGB scanner or camera files to CMYK for a press.

Colour Confidence also supplies the separate What Profile? Application (for Mac OS X/Classic and Windows), which

helps you to deal with images where the source profile is either wrong or absent. It shows your chosen image four times on-screen, with different input profiles – you choose the best and embed it by re-saving the file. Then you can optionally choose different output profiles (including the TypeMaker Colour Confidence CMYK profile) to simulate and preview how the image will look when printed.

Colour comparisons

Repro Pack is a basic method for judging the colour accuracy of a monitor or proof-printer. It gives you an A3 printed sample sheet, plus the same image as RGB and CMYK files. You can display the files on-screen and compare them to the print held alongside – once the monitor is calibrated, any difference is probably due to the room-lighting being the wrong colour. A small 'RHEM' strip on the sample sheet shows coloured stripes if the room lighting colour is too far from the ideal 5,000K. These files can also be printed on your on-proof printer, so you can visually compare the accuracy with the test sheet.

If you bought the three main components of Colour Confidence Studio separately, you'd pay £473, so this bundle represents a healthy saving.

Simon Eccles

DIGIT RATING



Colour Confidence provides a useful bundle of colour-management tools for people who need to control colour for print. Includes clear, concise explanations of a tricky subject.

RELEASE 8

NOW YOU'RE IN CHARGE

CINEMA 4D has won a host of awards since it was first released on the Macintosh back in 1996. These include consistent top-notch ratings in MacUser (5 mice), Macworld (5 stars), Computers Arts (90%) and 3D World (90%) plus the MacUser Best 3D Graphics Award in both 2000 and 2001.

Now comes the most exciting release yet. CINEMA 4D R8 contains hundreds of new features and product enhancements, as well as a new modular paradigm that allows you to purchase only what you need right now and then expand your 3D toolset as and when the work demands and the budget allows. So, you're in charge of what you need and when you need it.

The core package, CINEMA 4D R8, is an extremely robust and feature-packed 3D system at a truly affordable price. You can enhance specific areas of your workflow with additional modules, as and when you need them. Initially, seven modules are available: Advanced Render, PyroCluster, MOCCA, NET Render, Dynamics and BodyPaint 3D. Modules can be added individually or be purchased in two value-added bundles: CINEMA 4D R8 XL Bundle and CINEMA 4D R8 STUDIO Bundle.

It all adds up to the most powerful, the easiest-to-use and, quite simply, the best value-for-money 3D package out there – a breakthrough in the way people use and think about such software – and that's 3D for the real world.



CINEMA 4D

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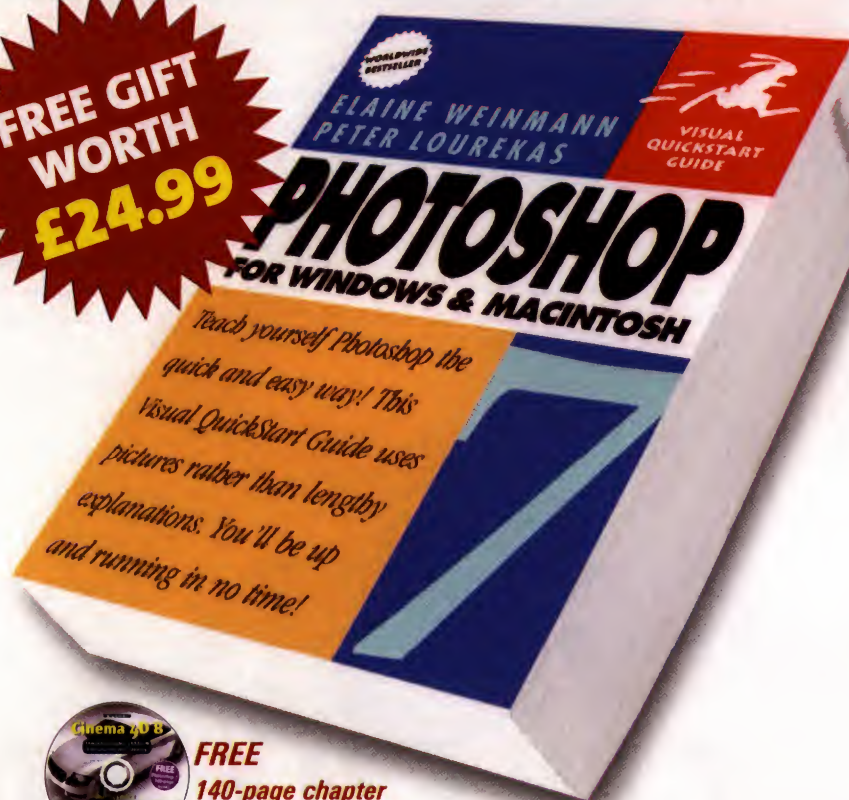
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Invasion

Digital video-editing software is now more affordable and powerful than ever. Real time, in-software previewing and effects are changing the face of the market. DIGIT takes a look at the top desktop editors.

By Cliff Joseph

When Adobe first released Premiere the best part of a decade ago, the idea of using a low-cost Mac or Windows PC for professional-level video-editing work was a bit of a joke.

Sure, Premiere had a nice interface and some sophisticated editing tools, but the hardware it was designed to run on just didn't have the raw processing power needed to cope with high-quality, full-screen video. You could buy upgrade cards that provided additional video-processing power, but these were extremely expensive and rather defeated the point of buying low-cost desktop computers in the first place.

Fast-forward to 2002. You can now buy desktop systems

running at speeds in excess of 2GHz. With that kind of power, even computers aimed at home users can handle high-quality video work. An even more important hardware development is the arrival of low-cost DV camcorders, which have opened up the world of filmmaking to a whole new generation of students and independent filmmakers.

So instead of being a niche market, desktop video editing is now a thriving marketplace – and all of a sudden, poor old Premiere has some tough competition. Professional users can safely ignore the hordes of low-cost editing programs on the market, but this still leaves a wide range of powerful software to choose from. →



of the video-editors



EDIT

edit v. prepare for publication

transitions
titles
effects
audio

Some features have become fairly standard, following the template established by Premiere. Most professional editing programs provide a timeline that can include multiple audio and video tracks. You can generally count on a wide range of special-effects filters and transitions, and some sort of titling facility. And, of course, they can all import DV footage directly from a DV camcorder.

The most important trend in the last year or so has been the arrival of software-only, real-time previewing that takes advantage of the latest desktop systems. Avid and Apple led the way with Xpress DV and Final Cut Pro, forcing a somewhat belated – but well executed – response from Premiere 6.5.

Real-time editing is currently the feature that sorts the men from the boys. Some of the second-tier editing programs, such as as MediaStudio Pro, can't do real-time work at all. Final Cut Pro provides real-time preview for many of its effects, but by no means all of them. That leaves a select group of programs, such as Premiere, Xpress DV, and the less well-known In-sync Blade, offering real-time capabilities limited only by the speed of the computer's processor.

Another important development has been the emergence of DVD as a mainstream technology. Many Macs and PCs now include a DVD burner as standard, and this has provoked a mixed response from developers of video-editing software. Most provide support for the MPEG-2 format used to create DVD Video disks, but DVD authoring features – for creating menus and navigational controls – vary enormously.

Some companies, such as Apple, treat editing and authoring as two different jobs. Final Cut Pro doesn't really attempt to provide authoring capabilities, leaving that task to DVD Studio Pro. Other companies have reacted with a knee-jerk bundling approach, generally by including a cut-down version of Sonic Solutions' DVDIt! software. But including such a basic piece of software with expensive programs such as Premiere or Xpress DV is little more than a token effort – an acknowledgement that the developers have been caught flat-footed by DVD technology.

But at least there's plenty of choice, and the intense competition in the market will ensure that these programs just get better in the future.

Adobe Premiere 6.5



Platform: Mac/Win
Company: Adobe, www.adobe.com
Contact: Adobe, 020 8606 4001
Price: £459 plus VAT

Premiere used to have the sub-£1,000 editing market pretty much sewn up, but has a lot more competition these days. This recent upgrade shows that it's having to work hard to keep up, but also proved that it still has a few good tricks up its sleeve.

The most important new feature is the addition of a real-time software preview. Premiere can now preview all its effects and transitions in real-time, unlike some rivals, such as Final Cut Pro, whose real-time preview is limited to just a specific set of effects. You'll need a reasonably fast Mac or PC to make the most of this feature, but anything running at 1GHz or above should be able to handle real-time preview fairly well.

Another welcome improvement is the new Title Designer module. This provides powerful text-formatting tools such as leading and kerning, as well as controls for settings such as fills, strokes,

shadows, and bevels. Text can be flowed along a path, type arranged horizontally or vertically, and animated titles can quickly be created by selecting roll or crawl options from a pull-down menu. There's a number of pre-defined text styles and templates for getting started, and you can save and export your own styles for use in other projects.

Premiere's audio tools have been beefed up a bit, too. The Windows version of the program includes three new DirectX plug-ins called Reverb, EQ, and Dynamics, while Mac users get a complete audio-editing program called SparkLE. The bundled Maestro program, used to generate soundtrack music automatically, has also been updated with new music styles such as 'Motown Sound' and 'Metal Mania'.

However, other aspects of this upgrade are rather less successful. Premiere's belated support for DVD technology is a bit of a mess. The MPEG-2 encoder included in the Windows version of Premiere 6.5 works well enough, although Adobe has had to license it from a third-party. There's no equivalent encoder in the Mac version of the program. Mac users who have one of Apple's built-in SuperDrives can use the free iDVD software to handle MPEG encoding, but those without are left to spend £800 on Apple's DVD Studio Pro.



Walkthrough - Creating titles in Premiere



It's taken a while, but Premiere 6.5 finally has a decent titling module. The new Adobe Title Designer allows you to create horizontal and vertical text, and to flow text along a path (left). There are controls for adjusting leading, kerning and other typographical settings, as well as a number of vector graphics tools similar to those found in Illustrator. You can draw simple shapes such as rectangles and circles, or use bézier pen tools to create more complex graphics.





Also missing from the Mac version of Premiere 6.5 is the DVDit! LE software that Adobe has licensed from Sonic Solutions in a half-hearted attempt to provide some sort of DVD-authoring capability. This is no great loss, though, as the LE version bundled with Premiere is a cut-down version of the full DVDit! Program. When we tried to test it out by importing some QuickTime and .AVI files into the program, we got an error message saying that those formats weren't supported unless we paid for an upgrade to the full version.

Premiere is still a top-notch editor, especially with its new real-time preview. However, these Windows-only DVD and MPEG features look as though they've been cobbled on as a last-minute afterthought, and Adobe really needs to sort out its approach to DVD work in the next upgrade.

Avid Xpress DV 3.5



Platform: Mac/Win
Company: Avid, www.avid.com
Contact: Avid, 01753 655 999
Price: £1,300 plus VAT

Xpress DV may have originated at the high end of the video-editing market, but Avid is clearly making an effort to appeal to more budget-conscious users who might otherwise opt for software-only products such as Premiere or Final Cut Pro.

Xpress DV is traditionally used with hardware that provides real-time capabilities, but version 3.0 brought a new software-only real-time preview that put it head-to-head with Premiere and Final Cut Pro. The program provides around 100 effects that can be previewed in real-time, and Avid also includes Boris FX, which provides an extensive range of effects. For 2D and 3D titling work, there's a copy of Boris Calligraphy.

Like Final Cut Pro, Xpress DV includes powerful colour-correction tools, although these are quite complex. The program's interface can be heavy going, too. Premiere users will be thrown by the 'text wrap' effect that flows video tracks down



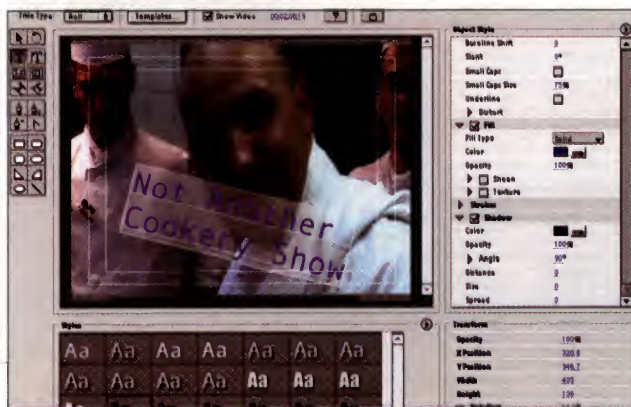
the Timeline window. Mac users may have a bit of a struggle as well: this latest version of Xpress DV runs only under OS X, but it makes few concessions to the OS X interface. We're also disappointed to see that the latest release still requires the use of an annoying hardware dongle.

However, Avid has done a number of things to try and make the program more accessible to new users. It provides a wide range of customizable keyboard shortcuts, and there's an option called 'Toolsets', which is similar to Premiere's 'Views'. The Toolsets menu allows you to switch quickly between screen layouts designed for specific tasks.

It may take a little extra effort and money to get to grips with Xpress DV, but it's definitely one of the most powerful software-only editing tools available.



Other options include the ability to rotate text, and to modify fill, stroke, shadows and opacity (above, left). Once you've created the title text, you can view it superimposed over specific frames of video by selecting the Show Video option (above,



right). This is helpful for checking positioning, or to see how colours match. A pull-down menu allows you to specify roll or crawl options, or you can create more complex animations by using the keyframe controls in the main Timeline.

Blade 1.0



Platform: Windows 2000/XP
Company: In-Sync, www.in-sync.com
Contact: X-Edit, 0845 054 0150
Price: From £330 (demo available)

Blade isn't a particularly well-known product here in the UK, although with UK distribution now sorted, this may change.

The program has a rather eccentric interface and looks a little confusing at first, but there's a kind of logic to the way it works. The screen is divided into a series of windows, with the Composition (timeline) window running along the bottom part of the screen. Above this is a window that is confusingly referred to as both Root and Bin, depending on where you look.

The Bin is just that – an area where you can import and dump all your media files, effects, and transitions. You can sort and view clips according to parameters such as the file name, length and creation date, or use the Bin for storyboarding before fine tuning the edit in the Composition window. One rather strange aspect of the program is that effects and transitions have to be loaded into the Bin from your hard disk rather than simply selected from a menu, and titles are treated as an effect, which can make titling work a bit of a struggle at times.

Blade has around 50 effects and transitions, all of which can be previewed in real-time within the software. The program also allows you to view your work on a computer screen and a TV/monitor at the same time, although In-Sync recommends that you buy a special 'Blade Pack' that contains a particular graphics card in order to use this feature.

In fact, Blade is rather picky about your entire hardware and software set-up. It will only run on Windows 2000 or Windows XP, and In-Sync recommends a PC with a 1.7GHz processor as the absolute minimum. Even then, we found the program to be a little sluggish at times.

Blade is certainly a powerful editing tool, and it's one of the cheapest editors to provide a real-time preview facility. However, its unconventional interface and low profile here in the UK suggest that it may struggle to win converts from the ranks of Premiere and Final Cut Pro users.



Final Cut Pro 3.0



Platform: Mac
Company: Apple, www.apple.com/uk
Contact: Apple, 0800 039 1010
Price: £705 plus VAT

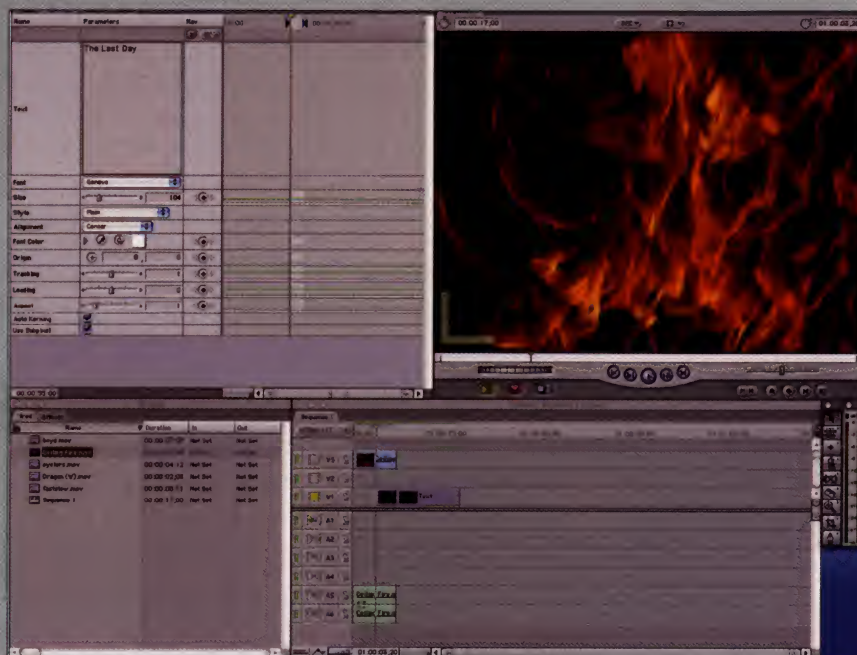
Apple put a few noses out of joint when it got into the video-editing business, as that move put it into direct competition with some of the top Mac software companies. However, there's no denying that Final Cut Pro has shaken up the video market for Mac users.

One of the most important features in the latest version is the real-time, software-based preview option. This allows you to preview editing work using two video layers, a single graphics layer, and a variable number of additional effects and transitions. The number of effects you can preview depends on the speed of your machine and its

amount of memory. Final Cut is a bit of a memory hog, so you'll need at least 384MB of RAM as an absolute minimum. There are also some effects that don't work in real-time at all, including the bundled FXScript software. To be fair, most of the effects that you'll use in day-to-day work, such as fades and dissolves, do work in real-time. However, programs such as Premiere, which handle all effects in real-time, have a slight advantage here.

Another important addition in version 3.0 is the new Offline RT format, which allows you to work offline with highly compressed clips. Using this format also eases the load on the computer's processor, meaning that more effects can be previewed in real-time. Offline RT will be particularly useful to laptop users who may be short on both disk space and processor power.

There's a powerful set of colour-correction tools in this version. The histograms and video scopes are a bit tricky to get to grips with, but you can fall back and use a number of ready-made colour filters,



Walkthrough – Creating voice-overs in Final Cut Pro 3.0

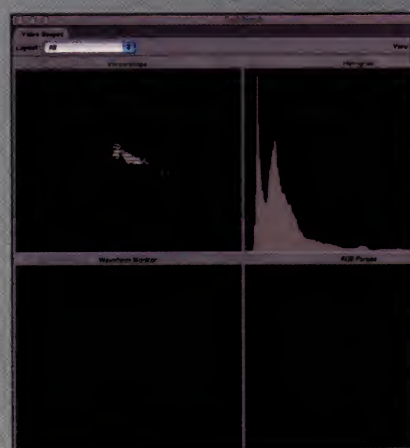


One of the new features in Final Cut Pro 3.0 is the Voice Over tool (left). This allows you to record a voice-over using an external microphone or the built-in microphone in a DV camcorder.

An 'offset' option compensates for any latency as audio is transferred from the source onto a file on your hard disk. This ensures accurate synchronization between the selected video clip and the newly recorded voice-over. The voice-over is automatically

such as 'broadcast safe' and '3-way colour correction'. In addition to Final Cut's built-in titling tools, Apple includes Boris Calligraphy for additional text effects, and there's a handy new voice-over tool as well.

Final Cut Pro 3.0's sheer depth of features is both a strength and a weakness. The three thumping-great manuals supplied with the program prove that it isn't an easy beast to tame, but it's certainly one of the most powerful editing tools in the sub-£1,000 range.

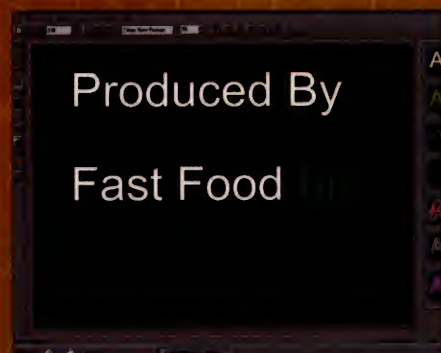


Edition DV

Platform: Windows 2000/XP
Company: Pinnacle, www.pinnacle.com
Contact: Pinnacle, 01895 442 003
Price: £382 plus VAT

Edition is available both as a standalone package, and as part of various bundles with additional real-time hardware. You may need that additional hardware if you want a real-time preview, as the software alone doesn't offer the feature. However, it does have a 'background rendering' option that renders effects while you continue to perform other editing tasks. Another interesting feature is the 'instant save' function. This automatically saves your work whenever you make any changes at all, so you'll never lose any work if your machine crashes.

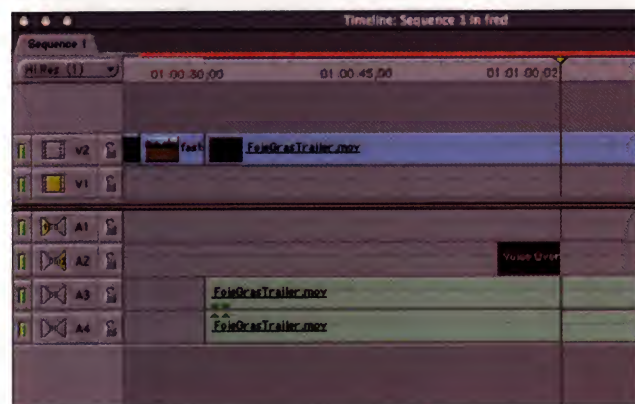
Edition's most important feature is probably its unusual interface. When you launch the application, it completely takes over the Windows desktop, even putting in a new Start button in the bottom-left corner of the screen. Like many editing programs, Edition has two monitor windows occupying the upper half of the workspace, and a timeline window running along the bottom. However, all the tools



and commands that would normally be found in various menus and dialog boxes are placed around the borders of the monitor windows.

This is a bit confusing at first, as most of the tools are represented by icons that won't have any immediately obvious meaning – but once you get used to it, the interface works well. All the program's main tools are sitting right there in front of you – and if you don't like them where they are, the interface can be customized. Pinnacle also bundles a good range of effects and titling software, in the form of Hollywood FX, Title Deko, and Alpha Magic FX.

The lack of a true real-time preview puts Edition at a bit of a disadvantage compared to some of its rivals, but its high-speed rendering and customizable interface make it an efficient tool all the same.



placed onto Final Cut's timeline, at whatever point you specify (above, left). By default, it's placed onto Audio Track 2, but you can place it on any audio track you want. You also have the ability to do multiple 'takes' – recording multiple



versions of the voice-over so that you can see which you prefer. Each take is added to a new track, and you can use Final Cut's audio-editing tools to edit together the best bits of several different takes (above, right).

MediaStudio Pro

Platform: Windows
Company: Ulead, www.ulead.co.uk
Contact: Ulead, 01327 844 755
Price: £349 plus VAT (demo available)

Ulead is probably best known for its consumer-oriented VideoStudio software. However, it also sells this more powerful editing program aimed at 'professionals and enthusiasts'.

To be honest, though, we think Ulead is being a bit optimistic in describing MediaStudio Pro as a 'professional' editing program. It's more powerful than VideoStudio thanks to its multi-track Timeline window, but this is a feature that most professional editing programs take for granted and certainly doesn't do anything to challenge the likes of Premiere or Final Cut Pro.

MediaStudio Pro also has an odd way of importing media clips, which will seem rather clumsy for anyone working in a busy production environment. Instead of importing files or folders into the Library window, you have to insert files directly into the Timeline itself or monitor windows. Anyone working with large numbers of files will soon find this approach very inefficient.

There's no real-time preview facility, and the program also has a limited range of transitions and filters, although Ulead partially makes up for this by including a useful rotoscoping program and audio-editor as part of the package. Even so, we can't really recommend MediaStudio to professionals who work with video all day long – it's really best suited to more adventurous hobbyists who have outgrown low-cost editors such as VideoStudio.



MoviePack 6

Platform: Windows 2000/XP
Company: AIST, www.aist.com
Contact: AIST, 0049 863 698 350
Price: €899 online

MoviePack isn't terribly well-known in the UK, as German developer AIST doesn't have much of a presence over here.

However, MoviePack provides a number of interesting features. The program has a modular design that makes it easy to add new features. This is more than just a matter of adding plug-ins, as major elements of the program are designed as modules that can be replaced or reworked by the



more adventurous user. The program's interface is one such module, with a 'skin' option that allows you to customize the interface any way you want.

The imminent release of version 6 will bring additional tools based on this modular approach. There are Video Paint and Morphing features, generators for both 2D and 3D titles, and a storyboarding option. AIST has also included a separate 3D modelling and animation program – Movie 3D – and a set of effects filters called ProFX. Effects can be previewed in real-time.

The only problem with MoviePack's modular design is that it depends on strong support from the user community to develop new modules. This will require a major marketing effort from AIST if it is to attract new customers from other parts of Europe and the US.



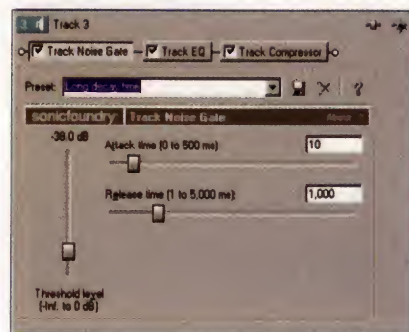
Vegas Video 3.0

Platform: Windows
Company: Sonic Foundry, www.sonicfoundry.com
Contact: SCV, 0208 418 0778
Price: £293.60 plus VAT (demo available)

Sonic Foundry is the developer of Sound Forge, one of the most popular audio-editing programs around. That background in audio technology is clearly apparent in the less well-known Vegas Video.

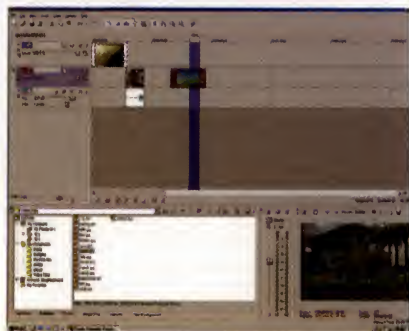
Vegas Video is stuffed with audio features, including the ability to create unlimited audio tracks, powerful mixing controls, and a graphic EQ. The company also raids its audio software library to bundle a wide range of audio effects and plug-ins with the program.

Video-editing capabilities aren't overlooked, though. The program's interface is a little unusual, putting the timeline in the upper half of the screen and the preview monitor down in the right-hand corner, but it doesn't take too long to get used to. A tabbed palette next to the preview monitor provides access to a wide range of effects and transitions, as well as text tools and an 'explorer' view for managing audio and video clips. This palette can also be switched into 'trimmer' mode, providing a handy way to trim clips



before dropping them straight into the timeline.

A real-time preview option rounds off the program's impressive set of features – and the price is pretty impressive too, coming in at less than £350 including VAT.



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Balancing quality with time spent are the key concerns when it comes to rendering. A skilled use of rendering technologies is essential for seeing the fruits of your 3D modelling and animation labours.

the art of rendering

by Christian Darkin

In terms of 3D creativity, rendering is the money shot: it's the stage where everything comes together – character and scene design, object creation, texturing, animation, and lighting. The result can not only make the scene or animation but, with skilled use of rendering technologies, create everything from a photo-realistic, real-world environment, to a cartoon, cel-shaded animation that dominates the cartoon networks.

Rendering also means waiting. It's a complex process – taking a 3D scene, crunching it through some daunting mathematics, and resulting in a final, believable image. Along the way, it takes in various processes such as raytracing, global illumination, anti aliasing, and multi-pass rendering that all impact the final image in terms of quality and rendering time.

For most designers, rendering is a trade-off – balancing the need for realism with the fact that some rendering processes can hog workstations for days. Client demands and deadlines play as equal a part in rendering as the technology itself.

This feature explores rendering for the non propeller heads: artists and designers that need to wade through the 500 plus rendering engines available. Some of these are built into mainstream 3D applications, while others are geared to specific output such as cartoon, architecture, real-time gaming, and lighting.

Before choosing your rendering package, and tweaking it for optimum results, a basic understanding of how rendering works – called the rendering pipeline – is in order.

A generic rendering pipeline comprises of four stages, and handles how 3D information is passed from the modeller to a final image. The first phase is creating the model – often called the co-ordinate space. Here, objects have a physical description (height and depth, for example), but there's no relationship to other objects – that comes in the second stage: the world space.

Unblocking the rendering pipeline

The world space is when you simply place a camera into a scene – imbuing objects with a position and orientation in 3D space to each other. This stage determines which parts of the 3D objects are visible in the camera – and tells the renderer to ignore the hidden parts, saving time. This is called backface culling, and means that the renderer doesn't bother to calculate parts of the model the camera doesn't see, such as the back of the model.

The third stage of the rendering pipeline is the screen space, where a final view is calculated depending on the camera attributes such as focal length and field-of-view. Here, elements outside the field of view are not rendered, and the renderer also calculates distance and perspective – objects in the far distance





Game on

Textures used in games are often pre-rendered. This means less strain on the gaming hardware itself.

Finally, we get to the fourth stage – that which most people associate with rendering. At this stage, when you hit the render button, each polygon in the scene is evaluated for depth and facing, is shaded, and finally rasterized. Anti-aliasing and motion-blur are often added here. Most renderers use scanline rendering; this is a process where the renderer starts at the top-left of the screen, processes a single pixel, then moves on to the next. Others use raytracing techniques.

Rays onto scanlines

The difference between scanline and raytracing is how the renderer sees the world. Scanline rendering takes the per-pixel approach as detailed above, and asks the question “if I stared through this pixel, what would I see?”. A scanline renderer processes pixels one at a time across the screen until it completes a line (the scanline), then starts again on the line below.

Previously, scanline rendering used a blanket-bomb approach – it would render objects furthest away and, if a closer object covered it up, would re-render that pixel – causing a massive slowdown. Modern scanline rendering engines look for the closest polygon on the Z axis, render that, and discard everything else.

Raytracing rendering is similar to scanline rendering in that it starts by peering through a single pixel, processing it, and moving onto the next. However, three things happen when a polygon is processed. First, the colour and brightness of the polygon is calculated from lights within the scene, then the refraction and reflection of the polygon are determined. Based on this, the renderer calculates how the light is bounced off that polygon. It then follows these beams of light as they bounce off polygons to process the scene.

The advantage is realism. Reflection and refraction calculations means shiny surfaces will reflect objects within a scene, and light shone into, say, water will illuminate the volume of that object. However, raytracing can result in billions of calculations, and many rendering tools provide a range of settings to determine how many light bounces the renderer follows before moving onto the next pixel.

Real-time rendering

The other significant rendering engine difference is real-time rendering compared to non-real-time engines. Real-time rendering engines are focused on speed, while non-real-time engines are geared towards accuracy.

Real-time engines are found usually in the client software for the 3D scene you’re creating, and in the 3D modeller itself. Good examples include games software, technology such as Shockwave 3D, and any 3D application that lets you model a scene with shading and textures turned on. Anything that allows real-time interaction with the scene on your workstation monitor is using a real-time renderer. It isn’t the most accurate display

rendering speed and quality

01. Area lights vs point lights.

Point lights render much more quickly, area lights are more accurate. Look at the way that shadows are cast from one object to another to really see the difference.

02. Reflection maps vs true reflections:

If an object is reflective, you can use an image map to simulate reflections or you can make the object a true mirror of your scene. The first method is far faster, but the reflections obviously won’t mirror what’s in the scene itself.

03. Radiosity vs no radiosity:

You can get great quality images using radiosity, but it takes a long time. Try faking it with area lights if you can’t afford the time.

04. Real-motion blur vs image-motion blur:

Real-motion blur requires that each frame is rendered several times between each frame, multiplying render times roughly by ten. Image-motion blur is a much quicker, but less realistic effect, added after the frame has been rendered.

05. Depth-of-field vs no depth-of-field:

Camera focal depth makes for realistic renders by blurring objects that are too close to the camera or too far away. It does this by rendering the shot over and over from slightly different angles. Expect render times to increase by a factor of ten.

06. Environmental effects vs clear air:

Environmental effects like haze, fog, smoke, and volume lights can yield some beautiful effects. However, they also add to render time. Try to use them sparingly.

07. Render farms vs single computer:

Obviously if you have several machines working on a render, it will progress faster. However, most networking setups farm out one frame at a time, so if you’re doing a still image, it won’t help. Also many require that you buy a separate software licence for each machine.

08. High quality anti-aliasing vs low or none:

The better your anti-aliasing, the better your objects will meld together into a convincing scene. Turning it off completely usually isn’t an option. However, do you really need to anti-alias the reflections in your shot? If you do, and you do it at high quality, it could take a long time.

09. Fields vs no fields:

You’ll generally want to render to fields if you’re making TV or video productions. It makes motion smoother. If you’re working on any other format, field rendering will do much more harm than good. Also, if you’re doing compositing, you’ll need to check how your interlaced frames will react. Field rendering is slower, but not by a huge margin.

10. Caustics vs no caustics:

Caustics is the focusing effect caused by light refracting through transparent objects such as glass and water. It isn’t something you’ll find in every scene, and it does take time, but if you have transparent objects, it can add a lot to the beauty of your scene.

(72dpi, at 1,600-x1,200 pixels for example), but it’s fast.

Real-time engines use tricks to deliver speed. Textures in games, for example, are often pre-rendered by a non-real-time engine, saved as a separate file, then pulled into the real-time engine as needed. The result is less calculation on the scene. Games such as *Quake* use this process. If 3D games design is where you’re headed, tricks such as these, or baking lightmaps into your scenes, are areas of essential research in order to get the best from a real-time rendering engine.

However, most designers recognize rendering as the waiting process while the workstation renders a scene – non-real-time rendering. These include applications such as Softimage|XSI, NewTek LightWave, and 3DS Max, as well as tools such as Splutterfish Brazil. While slow, these engines create stunning scenes, are able to handle subtle lighting and effects such as



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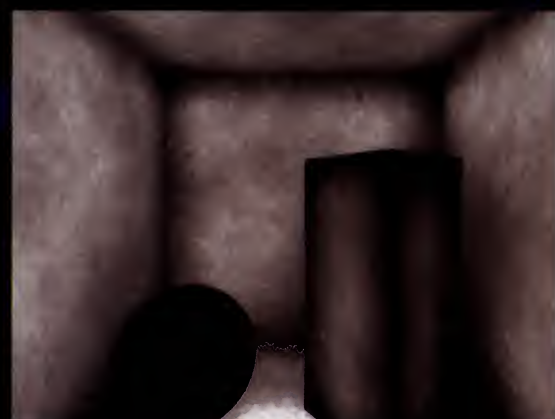




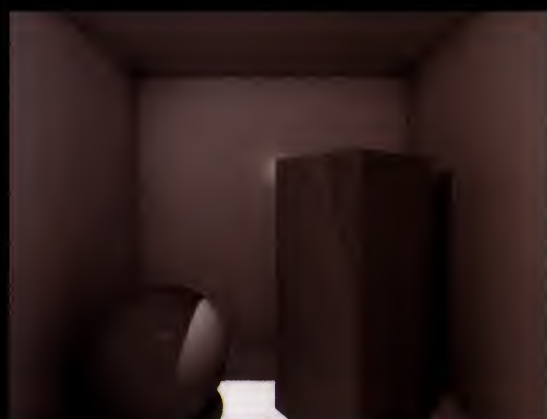
Shadow pass



Reflection pass



Lighting pass (with photon map)



Final render

reflection and refraction – and most use a raytracing rendering engine to calculate the light at rendering time.

Cartoon networking

The idea of a render isn't always to produce a photo-realistic image. Cell renderers are being employed to produce a hand-drawn look for cartoon animations. These employ several tricks, and tend to reduce the subtle variations in an object's shadow to just two or three shades. They also outline each object with black lines of varying width, and they ignore for the most part, subtleties like reflection, radiosity, texturing and materials.

The way cartoon rendering is handled differs between systems. Some packages offer a separate renderer for cartoon work, others, like Discreet 3DS Max 5 offer cartoon effects simply as a material – which you can place into any scene. This has the advantage of allowing you to mix cartoon and realistic elements in a single render – so you can have, for example, a cartoon character reflected in a mirror, or a cartoon landscape with photo-realistic characters.

Discreet Plasma contains a renderer designed simply for creating 3D flash movies with a cel-shaded look. Informatix Piranesi is a renderer for creating painted looking animations. It's specifically designed for architectural scenes, but can reproduce a number of painterly styles.

Shockwave and other Web 3D output formats are also offered by most 3D packages now. This is worth mentioning, but isn't strictly a rendering option. The geometry of the scene

is compressed and the files are saved, but the actual rendering is done in real-time by another system.

Multi-pass rendering

Compositing the CG elements with other image elements often requires that you subtly alter your rendered project to make it fit in better with its surroundings. The problem is that once you've completed the render, you can't go back and change anything without re-doing the render (which can take days or weeks).

Multi-pass rendering is a solution to this. Most renderers will let you, without seriously impacting rendering speed, spit out your project in several image layers.

Typically, you might want an alpha channel describing transparency. You might want to produce a highlight channel, describing just the shiny parts of the scene. You might even want to place different parts of the image on different layers for working on them separately in post production, weaving other image elements in front of or behind parts of your scene.

In addition, you might want to produce a Z-map – a greyscale image where objects close to the camera are shaded lighter than objects further away. Compositors can use this information to add a depth-of-field effect, for example. It's worth checking on the multi-pass rendering abilities of your renderer before you buy.

While this is all invisible to the end user, the last stage is where rendering engines step in. There's a multitude of techniques that can be deployed to determine how each pixel is processed, and where features such as radiosity and global



Light up your life

Radiosity simulates real-world light, making for some amazing effects.

illumination step in. So how do factors such as lighting, anti-aliasing, and the hardware you're running affect rendering?

Let there be light

The most significant factor that affects rendering is the way light is handled. Four walls rendered plainly can look like an average piece of technical drawing or, with radiosity and caustics, the result is a photo-realistic room.

The simplest type of light in 3D is the point light – which behaves as though light is coming from a single point. That means using the most obvious way of calculating the results of these lights – ray tracing. The result is that shadows will be sharp and clear. This is an accurate representation of the way light works, but it rarely looks realistic.

Using area lights are better, as they broadcast light from a larger source. This means the shading can be both accurate and soft, giving a greater range of realistic shadows. The centre of a shadowed area doesn't get any light from the light source, but the edges get a little from one side of the light or the other, so they're softer. Parts of the shadow close to the object are naturally sharper, but as you move further from the object, the shadow becomes softer. The results are far more realistic, but area lights take far longer to process.

If you really want to ramp up the quality, you can go for global illumination and radiosity. The downside is a huge increase in rendering times.

Tune into radiosity

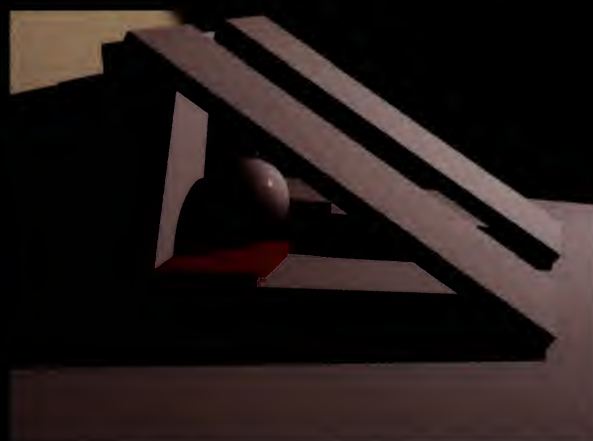
Radiosity forces light to bounce from every object in the scene. Light from a window, for example, will hit the back wall of a room, and bounce around the room, illuminating it in the way natural light works. By defining the reflectivity of objects in the room, you define how well the bounced light illuminates.

Radiosity works by analyzing the amount of light that hits a surface – including light beamed off other objects. If it varies by more than a set amount, the surface is subdivided, the calculation started again, and the scene is re-rendered with the new polygons given new colour values and shading.

All this is great for static scenes, and most print art uses radiosity to create realistic images. But radiosity tends to fall down in animation – as render times increase by an order of magnitude. Because of this, most renderers that support it allow you to do the radiosity calculation once, and then use the information in subsequent renders. If you change your scene significantly this can make the effects less realistic, however.

Global illumination

Increasingly common is the ability to create lighting set-ups from your model's environment. Here, the background of your scene is used to create an all-round lighting model. This is particularly effective if your world is wrapped in a panoramic image, as the



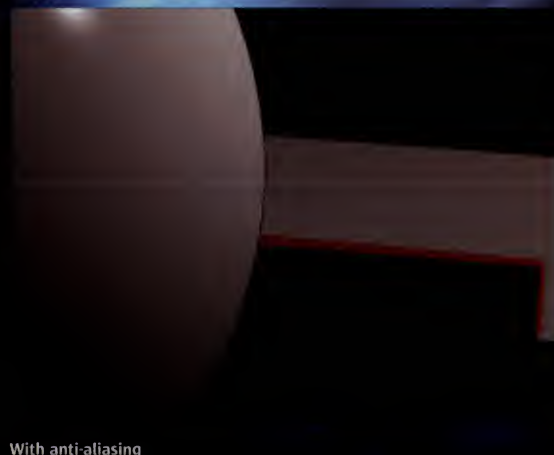
Without global illumination



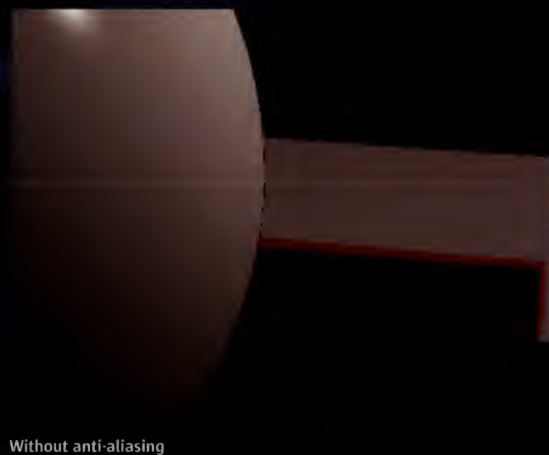
With global illumination



Toon shader



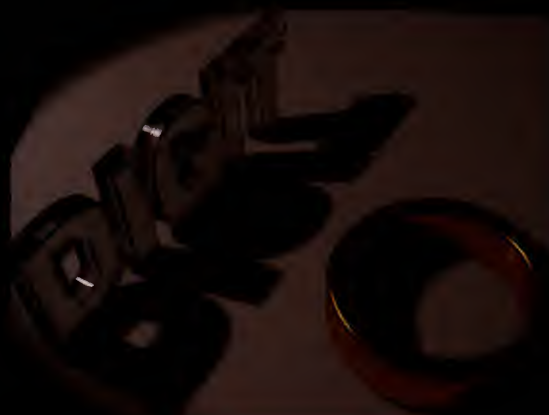
With anti-aliasing



Without anti-aliasing



With caustics



Without caustics

brightness values are used to produce variations in light level. Applications such as LightWave take lighting data stored in the image and use it to make a lighting model so good it can be used when matching real-world footage with CG elements. Illumination of this kind is usually faster than using complete radiosity solutions, often producing comparable levels of realism.

A final lighting effect that impacts on rendering is the use of caustics, which the most advanced renderers support. Caustic effects occur when light is refracted or reflected through semi-transparent materials. It's the effect seen when an intense point of light is focused through a magnifying glass, or when the bottom of a swimming pool appears criss-crossed with rippling patterns of light.

Going soft in rendering

Anti-aliasing is significant in that it's the softening that is carried out on a rendered image to avoid jagged edges. It's a result of the fact that the image is made up of pixels, and the renderer – trying to produce the sharpest possible representation of your modelling – ends up creating edges so clean that they show up the resolution of your image

Your renderer may offer a range of calculation types, or just a quality setting. Low quality tends to cut rendering time by not working on certain parts of the image, such as reflections. A good anti-aliasing tool, such as Cinema 4D's, can adapt anti-aliasing, focusing it on parts of the image where it really matters, and preserving the sharpness of the image in other areas.

Post effects are effects added to your render once it's been completed. Simple examples of these include colour-balance filters, film grain, and brightness adjustments. Post effects could be added by the 3D package itself, or by loading the finished shot into an effects package.

Within the 3D package, you'll often find post effects designed specifically for 3D renders. For example, glows, flares, and highlights are often added as post effects. Certain types of motion blur are sometimes put on after the image has been built.

The advantage of producing these effects as post effects is that they're much faster – rarely taking more than a few seconds on even the most complex of scenes. The disadvantage is that they can only ever be 2D. A motion blur applied after rendering, for example, compares the pixels in one frame with those in the previous frame, and decides which parts of the image are moving. Errors can crop up if an object moves behind or in front of another object – especially if their colours are similar.

Essential hardware

Rendering is a time consuming and laborious process, and one that requires little from the user. The computer can be set off, and then left alone – often for days – to get on with the job.

Graphics cards can dramatically improve the speed of your rendering – but you need to opt for units specifically designed to accelerate rendering. The Pure card and Renderdrive systems, for example, add hardware rendering to your PC, and include new rendering software to optimize performance.

3D renderers

RenderMan

Company: Pixar
www.pixar.com
Contact: Techimage,
www.techimage.co.uk
Hardware support: Windows NT/XP, Linux and Irix

Pixar's rendering engine was designed for use in feature films, and has been used in much of the work of Pixar and Industrial Light and Magic. RenderMan's film credits are many and include *Monsters Inc*, *Toy Story*, *A Bug's Life*, *Gladiator*, *Jurassic Park 2* and *Star Wars: the Phantom Menace*.

The basic RenderMan standard has been used to build a variety of other renderers including RenderDotC, 3dlight, and Exluna's commercial Entropy and shareware Blue Moon Rendering Tools. The last two have been discontinued with the settlement of a copyright lawsuit filed by Pixar and the subsequent acquisition of Exluna by graphics chipmaker NVidia.

Photorealistic RenderMan is Pixar's own version, and copes well with high-resolution images and extremely detailed scenes. Its procedural shaders, and the fact that it renders NURBS without changing them to polygons first, means that detail is preserved – and its motion blur and camera focus tools are excellent.

Version 11 introduced global illumination and raytracing so effects such as reflections, refractions, colour bleeding, and shadow penumbras can be produced with greater accuracy. It can also calculate effects that previously required manual intervention, so time spent setting up shots has been reduced.

MTOR is an Alias|Wavefront Maya-to-RenderMan converter that provides a seamless interface between the two.

Mantra

Company: Side Effects Software
www.sidefx.com
Hardware support: Windows NT/2000/XP, Linux, Irix

Mantra is the renderer that's integrated in the Houdini series of 3D products – Select, Escape and Master. It's well tuned to the TV and film industries – credits include *The Time Machine*, and *How the Grinch Stole Christmas* – and features enhanced support for highly detailed scenes. A scanline/raytrace hybrid that aims to provide the best combination of speed and rendering quality, Mantra includes raytraced shadows, reflections and refractions, and advanced anti-aliasing. Accurate depth-of-field and motion-blur effects are also provided. Support for Houdini's VEX language means Mantra can employ programmable shaders.

Mental ray

Company: mental images
www.mentalimages.com
Hardware support: Windows NT/2000/XP,
Mac OS X, Linux, Unix

Mental ray is the industry's leading photo-realistic raytracing and scanline rendering package with

a reputation for speed. Its features include global illumination, which simulates light interreflection in a scene; caustics; soft raytraced shadows; vector motion blur, for creating 3D-based motion blurs; and depth-of-field, for simulating real-world camera lens effects. Its shading language allows users to create their own shaders that can be used to control everything from texturing through to camera attributes and lens effects.

Discreet 3DS Max, Softimage|XSI and 3D, and Side Effects Software Houdini have integrated mental ray rendering and Maya users can now take advantage of the renderer with a free plug-in. Plug-in converters are available for other packages.

Brazil

Company: Splutterfish
www.splutterfish.com
Hardware support: Windows NT/2000/XP

A relative newcomer, Brazil was designed for 3DS Max, handling files natively, and claims unrivalled support for third-party Max plug-ins. Radiosity using area lights and global illumination is included. Caustics are well supported too as is sub-surface scattering – an effect that allows semi-translucent materials such as skin and wax to be correctly lit. Rendering speed is significantly faster for complex scenes than the standard Max renderer.

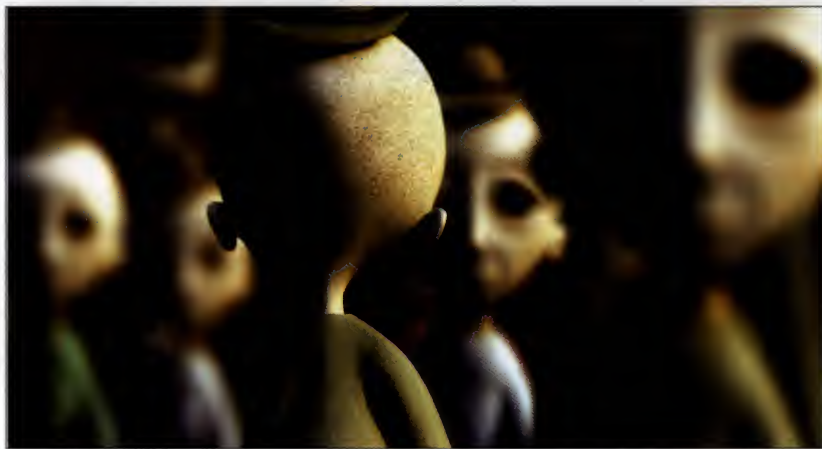
Brazil ships with three licences as standard, so you can have one machine to set up your renders and a further two as a render farm without buying extra software.

FinalRender

Company: Cebas
www.finalrender.com
Hardware support: Windows

FinalRender is a raytracing system for 3DS Max 4.2 and above. It actually works alongside Max's built-in scanline renderer, only kicking in when it's needed. Its main features are global illumination, caustics, and the ability to bake lighting effects into textures for use in real-time projects such as video games.

Some of the wind has been taken out of FinalRender's sails with the release of 3DS Max 5 and its new rendering features. However, it still offers advantages, and Cebas is promising a new version soon that will replace the Max renderer entirely, and include as yet unseen features such as 'light particles', which promise more mathematically accurate lighting.



However, it makes sense to set up a render farm if you've a large amount of work. This is a collection of networked computers that can all be used to render different parts of a project simultaneously. Most 3D packages have support for network rendering – including low-end tools such as Corel Bryce and Caligari trueSpace. Many simply farm-out frames automatically to whatever machine is available, while some, such as Electric Image Universe, use sub-frame rendering – farming out parts of frames. The advantage is that rendering will be faster even if you're only creating stills.

I'm ready for my closeup...
Make renders more realistic with camera focal depth. This may increase rendering times, but the results are well worth it.



Glassworks finds a new way to skin a cat for Mercedes car ad

by Lynn Wright

Digital animation and effects house Glassworks used Softimage|XSI to get under the skin of a falling feline for its latest project - a commercial for the Mercedes S Class that illustrates the car's safety features.



Dropping a cat from a great height is all part of a day's work for the team at Glassworks, the digital animation and effects company. But before you reach for the phone to call the NSPCA, no animals were injured in the making of Glasswork's latest project - a commercial for the Mercedes S Class. Produced by Gap Films and directed by Daniel Levi, the ad highlights the car's safety features through a slow-motion, close-up study of a cat as it falls upside down and twists in the air to correct itself in order to land safely on the ground feet first, without losing any of its nine lives.

"We follow the motion of the cat during its fall, and as the animal begins to twist dramatically in the air to correct its position for a safe landing, we

dissolve into an x-ray image of the whole scene. Once a happy and safe landing has been accomplished we pull focus to the Mercedes - in similar x-ray form, displaying its own unique interior safety system," explains Glassworks senior producer Louisa Thomson.

Free-fall feline

The camera swings round the falling cat and tilts showing its shape, muscles and skeleton from every angle. The ad ends with a live-action scene that shows the cat stalking off screen, leaving the Mercedes to take centre stage.

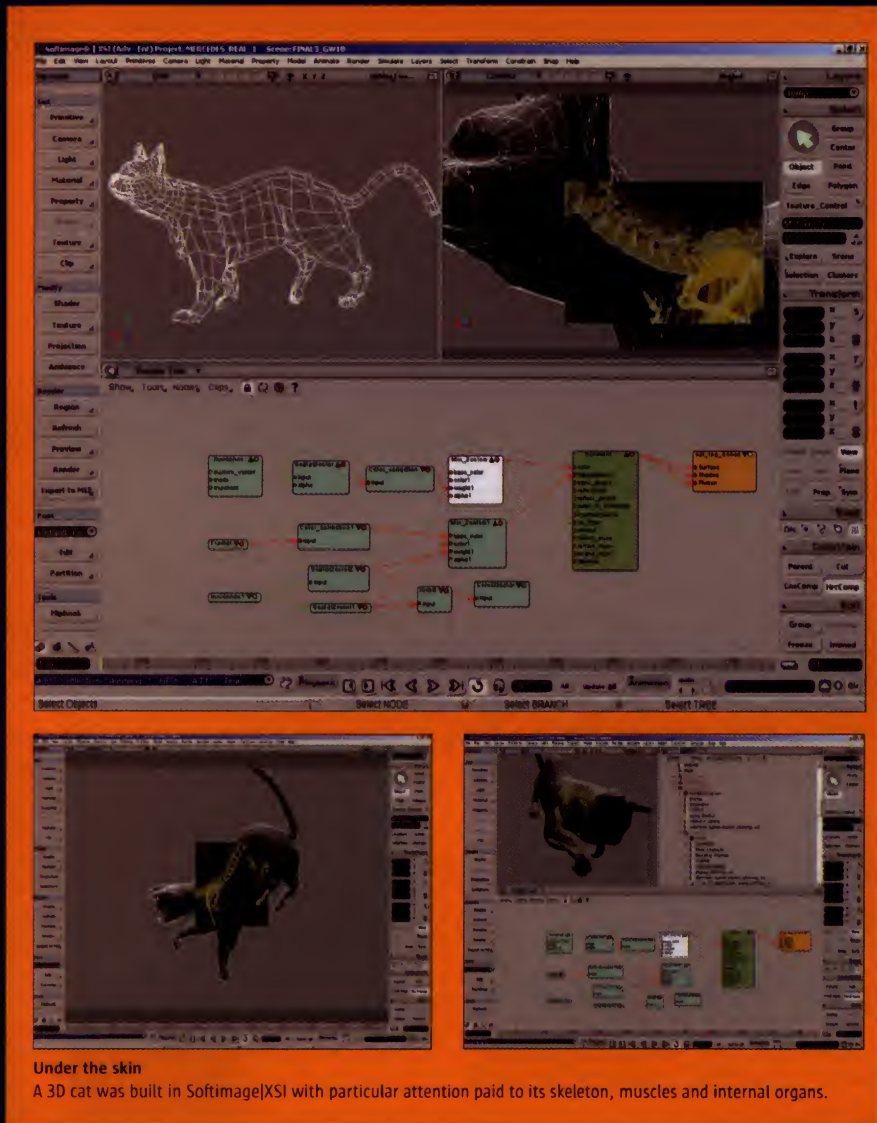
Filming the falling cat was the first challenge facing the Glassworks team. Planning and pre-visualization work on how to shoot the cat was

necessary says Thomson, and the team made use of an animatic created by Alastair Hearsom, head of 3D at Glassworks. "The movement of the camera in relation to the drop of the cat was crucial to making it work," says Thomson. "Daniel is also a technically minded director so he was wholly involved at every stage and could comment sensibly and helpfully on 3D which kept us heading in the right direction."

The cat was shot against a green screen and the camera rigged to move around its fall in a helter-skelter shape. As the cat needed to be shot at very high-speed in order to catch the intricate details of its body movements, Glassworks used a Phantom 5 digital photostonic camera.

"The Phantom 5 camera uses high-speed video





Under the skin

A 3D cat was built in Softimage|XSI with particular attention paid to its skeleton, muscles and internal organs.

that stores frames in the RAM of the camera. It can hold about four seconds of action and allowed us to rotate and tilt the camera in one continuous shot in the way we needed," explains Bruce Steele, director of visual effects at Glassworks.

Steele, in conjunction with Glassworks' R&D department, then wrote a program to filter artefacts from the frames. This left a film-quality image that was processed through a Kodak Cineon system to interpolate the frames from 1,000 to 2,000 frames per second – slowing the motion of the cat even further.

On the right track

As the commercial switched from live-action to x-ray and back, tracking was an important issue. As the live action cat was large in frame, moving very slowly and contorting dramatically as it fell, tracking it to match the 3D was tricky says Thomson.

Using Softimage|XSI, Hearsam built a 3D model of the cat complete with internal organs, skeleton, muscles and tendons, to allow for a perfect match in the final dissolve. An x-ray version of the Mercedes

car was built in 3D to match the one shot, along with x-ray plates of buildings for a background to the cat's descent. For the live-action sections of the commercial, the 3D buildings were textured with digital photos. All the 3D elements were created in just over six weeks.

The live-action frames of the cat and the 3D were composited in Inferno. The ad is a global campaign for Mercedes that airs initially in Germany.

Software

Softimage|XSI
Adobe After Effects
Apple Shake
Discreet Inferno

Details

Glassworks, www.glassworks.co.uk
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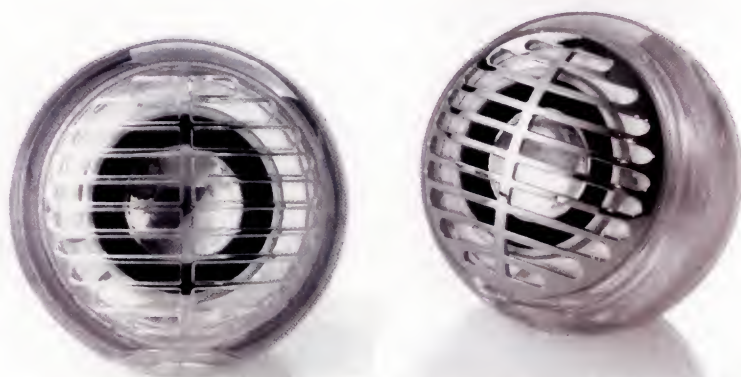
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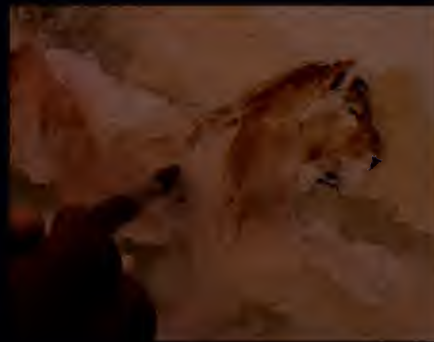
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My Heart is a Lion bounds into production with Xpress DV 3.5

by Lynn Wright

Mark Hawtin's film, *My Heart is a Lion*, tells the tale of Ugandan artist Frank Taga. Equipped with a two DV cameras, a laptop and Xpress DV, Hawtin completed an offline edit while on location in Uganda.



A chance meeting with London cab driver John Senteza initiated a project that took producer/director Mark Hawtin on a journey to Africa and the US to tell the story of the Ugandan artist, Frank Taga.

Senteza told Hawtin of his regular trips to Uganda to help Taga – his brother-in-law – organize annual exhibitions of his paintings. Taga's animal Totem paintings have an international following, with Nelson Mandela and Bill Clinton among those who own his artwork.

Hawtin's film *My Heart Is A Lion* follows the two men in the leadup to an exhibition and is described by Hawtin as "a human-interest story, a wildlife film, and docu-drama rolled into one, which celebrates Ugandan culture, the conservation of endangered animals, and unbreakable family bonds".

Hawtin travelled to Uganda to meet Taga in August 2002 with two DV cameras – a Sony PD100 and PD150 – and an Apple PowerBook G4 with a copy of Avid Xpress DV, donated by Avid, in order to begin offlining while on the road.

"Equipped with a state-of-the-art laptop, I could edit anywhere, from the national parks, Ugandan

cities and even onboard the international flight back to London," says Hawtin. An Avid editor for seven years, he wanted to work with Xpress DV because of its familiar interface. "I love using the software, it's user friendly and fits like a glove," he says.

The Ugandan shoot was completed in two weeks with Hawtin filling 80 DV tapes each holding 40 minutes of footage. "Shooting docu-dramas is exciting because you never know how lucky you'll be in capturing 'that moment', explains Hawtin. "When shooting the interviews or the wildlife, I filmed everything I could, editing in camera where possible."

Broadcast-quality footage

Budgetary constraints prohibited shooting on film or using digital Betacam, so Hawtin opted for DV. "DV cameras have got a bad name in some circles of the television industry because they can find themselves in the hands of untrained personnel," he says.

"I wanted to prove that DV cameras can capture high-quality broadcast images, if used correctly."

Sony's PD150 DV camera with a wide angle conversion lens suited Hawtin's requirements for a affordable, FireWire-compatible three-chip camera

that was lightweight, with good ergonomic features, and balanced XLR audio imports.

As well as tripod and handheld camerawork, Hawtin hired an aeroplane for aerial shots, used an extra car to get shots of a 4x4 driving into the jungle to find mountain gorillas, and improvised with a lipstick camera attached to two pieces of bamboo to create a sweeping shot that starts from the top of the truck and finishes inside the vehicle.

The shoot was not without minor hitches. Hawtin had to cope with interruptions in the Ugandan electricity supply. "I had to conserve batteries and rely on local knowledge of when the power would come back on," he says. His equipment stood up to the challenge of the shoot with the exception of some minor software crashes running on the first version of OS X that were solved by installing OS X 10.2.

The film is currently in post-production and is scheduled for distribution early next year. "I'm very happy with the way the film is turning out, and am confident it will be successful," says Hawtin. "I've had people see the work in progress and assume I had a big crew and expensive film gear. That's a massive compliment!"

Offline edit

Using Avid Xpress DV 3.5 on his Apple PowerBook, meant Hawtin could begin editing his documentary while on location in Uganda. As an Avid user since 1995, he was at home with Xpress DV's timeline and interface.

Software

Avid Xpress DV 3.5
Adobe After Effects
Adobe Photoshop

Hardware

Apple PowerBook G4
Sony PD150 DV camera
Sony PD100 DV camera
Senheizer radio microphones

Details

www.myheartisalion.com
Mark Hawtin, mail@markhawtin.com



Realm raps out 110 VFX shots for Missy Elliott *Work It* pop promo

by Lynn Wright

Missy Elliott's video for her new track *Work It* sees the rap diva in a series of surreal, highly-stylized scenes, courtesy of the 3D modelling and animation, visual effects and rotoscoping skills of Realm Productions.

The accompanying video for Missy Elliott's latest release *Work It*, from her new album *Under Construction*, sees the rap artist in a number of surreal scenes.

One of the key settings is a ruined playground that's dotted with gnarled trees and framed by stylized storm clouds where Elliott performs with a group of dancers. Other scenes are set in a beauty parlour, an underground car park and a subway. In every scene, the colour and lighting has been manipulated and several scenes include neat visual tricks. In one Elliott raps as bees crawl over her face; in another scene, she swallows a model Lamborghini in a quick gulp. In a school room set, a girl sitting on a stool while wearing a dunce cap, has Elliott's face.

With its use of clever visuals, the video – directed by Dave Meyers of FM Rocks – furthers Missy Elliott's reputation for appearing in some of the most visually arresting videos on MTV. It also plays on Elliott's altered real life appearance – she has slimmed down dramatically since her last album release.

Memorable visuals

"It is an incredible video," says Rony Soussan, visual effects supervisor of Realm Productions, the company responsible for the computer animation, visual effects and other creative services for *Work It*. "Dave Meyers came up with an amazing amount of sets and environments. It is vivid and Missy Elliott gives a great performance," he says.

Realm Productions created more than 110 shots in all for the video. One of the more unusual effects the team produced involved the beauty parlour sequence. Using Eyeon Software's visual effects and

compositing package Digital Fusion, Realm artists hand rotoscoped Elliott's image from the scene and colourized it – alternately in over-cranked green, blue and purple hues. The colorized images were then composited into a version of the background environment produced from a negative transfer.

Rotoscoping remedies

"We did something similar with the break-dancing sequence," says Soussan. "We rotoscoped the performers so that we could change the background colours without affecting the skin tones."

One of the most memorable scenes from the video sees bees crawling on Elliott's face and this called for some of the most careful post-production work of the project. "We had to surgically remove the bees from the plates they were shot on and apply and track them individually to her face," recalled Soussan. "It was a huge challenge, but it was very successful."

For the trick with the Lamborghini, Realm produced the car as a 3D element and used Digital Fusion's warp tools to manipulate Elliott's facial features and create the swallow.

For the schoolroom scene, the Realm team tracked in a clean plate to erase the girl's head and applied Elliott's in its place. The artists tracked the movement of the girl's head and applied that data to Elliott to match the movements.

The video makes several comments on the issue of race, most notably through a scene involving a slave owner and a slave. When the slave slaps his master's face, it shatters exposing a black man beneath. Realm used a particle effect to create the



shattering face. The video includes references to Prince and Halle Berry, whose image Realm warped to appear in the bottom of a glass. It also features several tributes to the late singer Aaliyah.

For finishing and conforming, Realm used Leitch Technology's dpsVelocityQ real-time nonlinear editing system. Using the dpsVelocityQ system, equipped with Medea RTRX drives, meant the studio could complete all of its final post work inhouse, according to Soussan.

"It's the reason we were able to complete the 100-plus effects shots and deliver a finished master of the video in less than two weeks."

Details

Realm Productions,
www.realmproductions.com
001 310 350 1863

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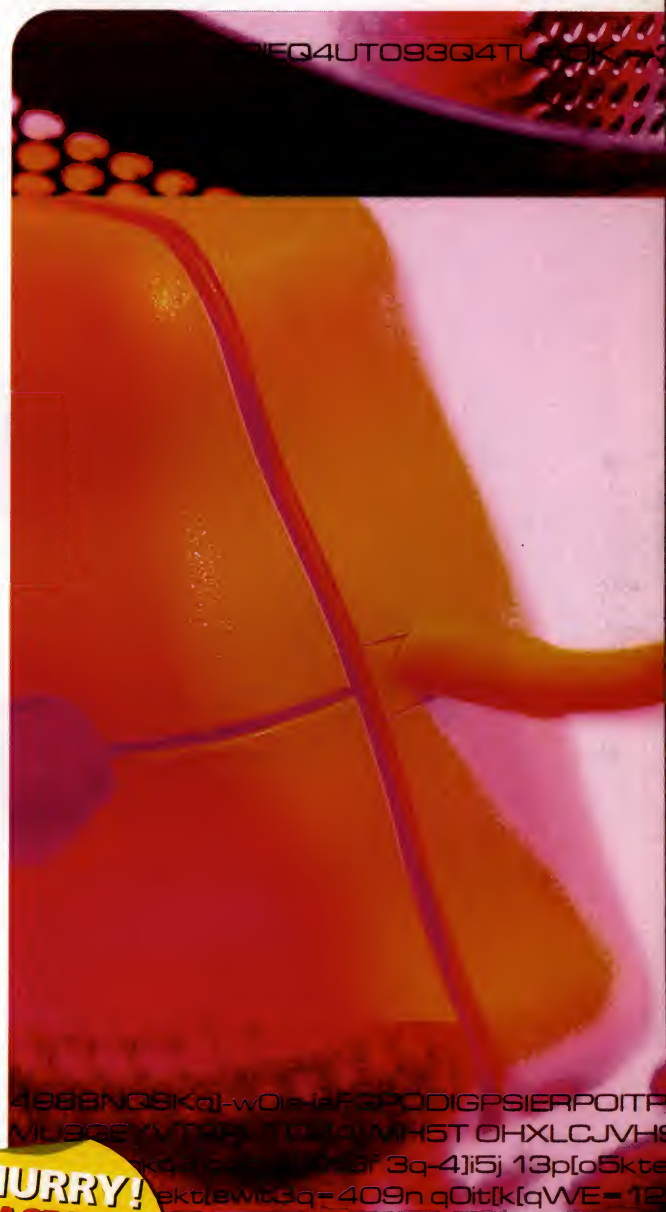
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Sony keeps it real on the mean streets of London in *The Getaway*

With the launch of *The Getaway*, games fans are set to enjoy some of the most realistic character animation in a game to date. **DIGIT** found out how Sony's game developers brought East End gangsters chillingly to life.

The long-awaited PlayStation 2 game, *The Getaway*, offers games players the chance to participate in high-speed chases and gun battles set in the grimy underworld of London's East End. Sony Computer Entertainment Europe (SCEE) were keen to create the realism of a feature film within the interactivity of its 3D game. One of the most important ways the game achieves this is through the characters – of which there are over 100, from main actors to pedestrians, drivers and work crews on the street. Each one has a realistic face complete with blinking, breathing and expressions of emotion.

According to Dave Smith, character artist, creating the characters was the most difficult and time-consuming aspect of the game's development. "We wanted the player to be able to see the expression on the character's face and to empathize with him. You can't do this by hand. You could never be that accurate," says Smith.

Real-world detail

To achieve the required accuracy of detail, SCEE developers digitally recreated real actors and their clothing using Eyetronic's ShapeSnatcher Suite 3D scanning and modelling system. Actors' faces were scanned and modelled, and real-time motion capture helped complete the characters' movements.

"ShapeSnatcher provided us with a great start to our in-game models," Smith says. "The scans are quick and accurate – too accurate, in fact. The detail level in the scans was far too high for us to run in real-time on a PlayStation 2. Consequently, the character artists used the scan as a template to build a lower-resolution model."

Not only did the 100 plus characters have to be

modelled, rigged for animation, and set up with SCEE's proprietary facial animation system, all had to have facial expressions modified to match the video reference of the live actor. This was done four times for each character to take into account one high-resolution cinematic model and three in-game levels of detail. The sheer volume of work required on the character's faces alone was intimidating.

Face off

Eyetronics' Liquid Faces helped shave weeks off the character modelling process, according to Smith. It was used to automatically morph scanned faces to SCEE's custom template. This had been created using a facial skeletal system, which uses joints to simulate the actions of muscles in the face. By combining the muscle movements, the game developers can produce smiles, anger, shock, or other emotion.

SCEE's system posed a problem, however, explains Smith. "Everyone's face had different proportions, and we needed the simulated muscles to line up under the skin in the correct positions, or else very strange things would happen," he says.

Liquid Faces solved the problem by aligning the joints into their correct positions to match the scanned actor's face to the template.

"We had a single face template model, which had the required level of detail, a facial skeletal system, and all the basic expressions and speech shapes ready to use," Smith says. "Liquid Faces took the raw scan data and the template and morphed the low-resolution models to match the high-resolution scan. Then viola, one in-game character head. We just added hair and tweaked the animation to match the actor and it was ready to go."

Using Liquid Faces, the game developers could



complete a model from an initial scan in just a day and a half instead of the two or more weeks normally spent modelling them from scratch.

Character files were then transferred to Alias|Wavefront Maya for final rendering. Actors' motions were captured with an Ascension motion tracker and brought into Kaydara Filmbox – which integrated the motion data with the 3D characters for real-time display.

by Lynn Wright

HotKnife creates a 3D clockwork world for Boom Bip video promo

by Lynn Wright

Created in Discreet 3DS Max and rendered through an Art Pure card, HotKnife Digital Media's animated music video for Lex Records artist Boom Bip introduces an abstract world populated by wind-up toys.



When it comes to creating a pop promo, most creatives would imagine being faced with a generous budget and a deadline at least several months down the line. Not so for HotKnife Digital Media, which has just completed an animated promo for Lex Records artist Boom Bip's track *Mannequin Hand - Trapdoor I Reminder*.

The Nottingham-based design studio's involvement in the project came through a Web-based scheme called Four Minute Wonders (www.4minutewonders.com).

And the winner is...

A music video production scheme that's managed regionally, the site offers the chance each month for creatives to win £5,000 to create a music video within four weeks. Each month an mp3 track is featured which visitors can download and then submit a proposal for a promo based on the track. The best proposal is chosen by a panel of judges. For Boom Bip's track, Warp Records, the parent company of Lex Records, was closely involved in the judging process.

HotKnife directors Simon Wallett and Andrew Whitney wrote the original proposal, just six lines of text simply outlining their ideas. "The track was very mellow and had a happy rhythmical beat that conjured up a mechanical feel. As soon as we first heard it we thought of wind-up toys plodding over a landscape. It also had a darker undercurrent for which we created an old forgotten robot toymaker who creates and plays with the clockwork world at night," explains Wallett. "This formed the basis of the submission."

Further discussion with the judging panel helped

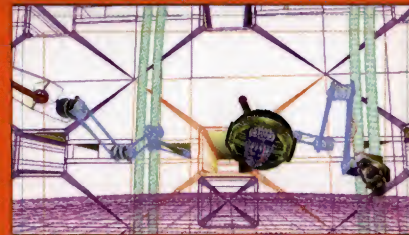
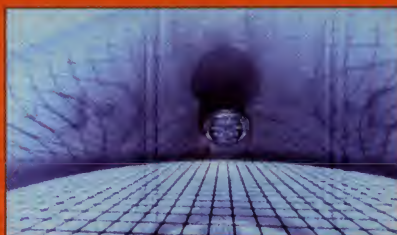
flesh out how the promo would look and work as a finished piece.

After setting out a brief storyline, the HotKnife team created rough designs for the toys and the toymaker, and drew simple storyboard scene panels of the scenes that were deemed essential to the plot.

"This proved to be a quick and non-linear approach that we could then scan in, chop up and

drop onto an edit timeline to see how it worked with the song both time and story wise," says Whitney. "It quickly became apparent where the gaps in the story were and which parts of the song we'd got too many ideas for."

The team took their inspiration from 1950s-style wind-up tin toys, combining their design and surface graphics with more contemporary Japanese toys. "We



The technical aspects of combining CG animation with live video was one of the main challenges of the project says Wallett. HotKnife solved the issue by making a 3D face mask from still photos of a real person shot against a chroma screen, mapping his face onto the model, then animating and morphing it to provide the required expressions.



A toy story

Producing over four minutes of 3D animation to broadcast standard in just four weeks with a limited budget meant HotKnife needed to keep the animation relatively simple. The team have used 3DS Max since version 2 and completed all the modelling and animation for the project in the software. Its low-polygon modelling, says Walleit, meant character building was quick.

While the toys are fairly simple shapes placed into an abstract landscape, Walleit and Whitney incorporated photo-realistic rendered objects, such as the conkers, poppy head dandelions and the grass, in the scenes.



liked the daft expression on their faces and thought it would look funny when they were placed in various odd situations," says Walleit.

The promo sees a contrast between the abstract landscape populated by the toys and the cold, bleak world of the toymaker. HotKnife designed a two-colour palette range, using a warm set for the world of the toys, which says Walleit needed to be vivid and clean as if created from a source such as a dream, yet retain the feeling of being electronically or holographically produced. A blue/grey colour range was used to give the toymaker's world a desaturated, cold metal harshness, as if set in some dank, long forgotten prison or factory environment.

HotKnife used Discreet 3DS Max to build the toys, material and environments. "Max's low-polygon modelling and mesh smoothing made character building quick and always editable," says Walleit. Working from the animatic, the team then took the timings and rough camera shots and began animating the scenes with the 3D models, replacing storyboard stills with wireframe previews on a scene by scene basis.

According to Walleit, the design of the toys and their inherent mechanical movement made both the modelling and animation relatively straightforward. In contrast, the complex and more lifelike character of the toymaker posed more of a challenge. To create the toymaker, an actor was videoed and photographed against a chroma screen in a variety of moves and poses. Although the team had originally planned to combined the video with the CG elements, none of the methods they tried proved satisfactory. Instead,

still photos, manipulated to give an eerie android look, were used to build up a 3D face mask based on the actor's own face and his face was mapped on. The face mask was animated and morphed to provide the expressions required for the promo.

Scenes were then lit and textured. Textures the team had captured using a Sony digital-still camera were tweaked in Adobe Photoshop.

The animation was rendered though an Art Pure card employing radiosity to achieve the realistic feel and style of the shadows and materials.

Pure and simple


"The Pure card gave us the quality of reflections and image essential to the production of both of materials and lighting," says Whitney. "We used the skylight shader for the interior of the globe to produce subtle shadowing, while the superior bump-mapped materials combined with spotlights helped emphasize the dirty, harsh exterior world."

"Without the Pure card, we wouldn't have begun to consider depth-of-field, or motion-blur shots to the extent that we did on such a tight deadline," adds Walleit.

An initial render pass was produced, using fields for smoother motion and a slightly coarse render quality to look less like video. This was dropped over the previews, with the team tweaking the timings and edit points as they further refined the story. Some scenes were dropped at this stage, and new scenes created involving further renders.

The footage was then imported into Combustion and colour corrected for the two different worlds,

inside and outside the globe. Combustion was also used for compositing, and grading the final footage. "It was superb for compositing some of the shots that had additional layers of detail such as the scene with the bee flying through the horse chestnut leaves," says Walleit. "It has keying, colour correction and film-grading facilities all superior to After Effects."

A final grading grain was then combined with the scenes. "The fields were interpreted to output a final unfielded version that had an aesthetic closer to that of film rather than video," says Walleit. Speed Razor was used to edit and print the finished promo to tape. The video can be seen at www.hotknife.co.uk/boom. 

Software

Discreet 3DS Max
Discreet Combustion
Adobe Photoshop
In-sync Speed Razor

Hardware

ART Pure card
Sony digital-still camera
Windows workstations
Beta-sp camera
DPS Perception

Details

HotKnife Digital Media, www.hotknife.co.uk
0115 969 3600

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Advanced rendering in Cinema 4D 8



Most newcomers to 3D often leap straight into a scene, then hit the generic 'Render...' button when finished. The results can be less than satisfactory, as polished renders demand attention to detail. Couple this with a rise in realism; where 3D scenes are taking on a more photorealistic look, and you need to delve into advanced rendering tools such as those offered by Maxon Cinema 4D.

In this tutorial, we'll use radiosity and a subset called global illumination to bounce light around a scene in a highly realistic manner. A Cinema 4D 8 demo is on the CD.

Software

Maxon Cinema 4D 8, Advanced Render

Hardware

Mac and Windows PCs

Contacts

Maxon, www.cinema4d.co.uk

CDigit 56



A full demo of Maxon Cinema 4D 8 for Mac and Windows is included on this CD, along with the files needed for this tutorial.

STEP
1



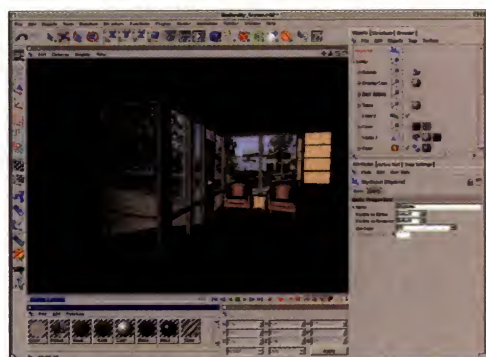
To get started, load the file called 'Radiosity_scene.c4d' from the Features>Advanced Renderer>Radiosity folder. For this tutorial, there are several points to remember when creating a scene for radiosity. First, the control of lighting is vital – you need to make sure that light can't seep between objects that butt up against each other. Always used 3D geometry joins, as in this scene, rather than flat-plane 2D joins.

STEP
2



The second is to deploy textures wherever possible – such as the images seen through the window in the above scene. Radiosity takes an age to render, and anything that cuts down on calculation – and by using as little geometry as possible – means rendering times can be cut. The above scene is a straight render using the default settings and no global illumination. So, let's add some realistic lighting to the scene.

STEP
3



First, create a sky object by choosing Objects>Scene>Sky and, in the lower-right pane, label it 'Skydome'. The skydome surrounds the entire scene, and generates radiosity lighting, such as that generated by the sky. The next task is to give the skydome a luminance-only material, and hide it from the final render.

STEP
4

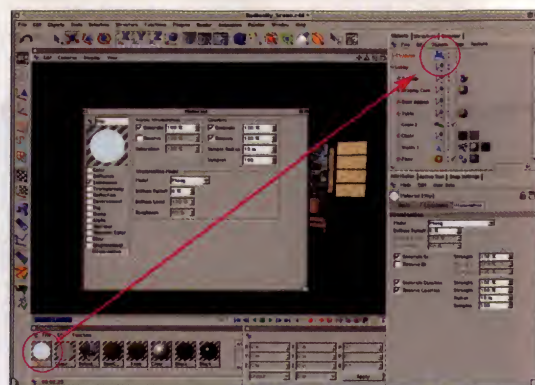


To do this, create a new material and call it 'Sky', then double-click its preview in the Material manager (bottom left). The Material Editor will then open. Here you can apply new attributes to make the sky. For now, uncheck all the check boxes on the left-hand side of the dialog, disabling all the attributes – the material should look a matte black.

STEPS 5-16 →

STEP
5

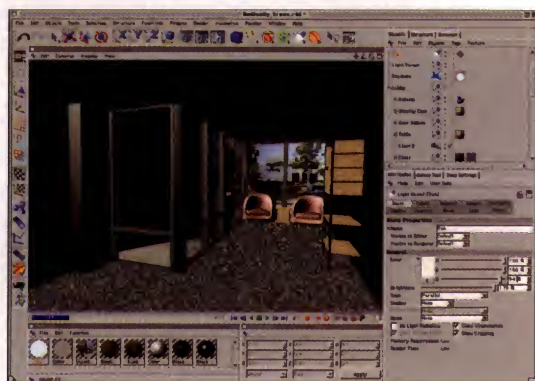
Activate the luminance channel by ticking the luminance check box, and its settings page should open (right of the channel list). For this, we need to create a very light cyan for a bright sky simulation. Set the RGB/Brightness values to 90, 100, 100, and 100 per cent respectively.

STEP
6

Activate the illumination channel by clicking on the 'illumination' channel tag on the left-hand side. Disable the 'Receive' checkbox under the Global Illumination pane. This is necessary to prevent the object from being seen in the final render, and ensures it simply generates radiosity light. Close the Material dialog, and drag it from the Materials preview to the Skydome object (upper-right).

STEP
7

With the new material applied to the Skydome object, you can see it as a wireframe preview in the scene (above). However, this will not render out in the final scene. Next, we need to shine some sunlight onto the scene in order to kickstart the radiosity calculation.

STEP
8

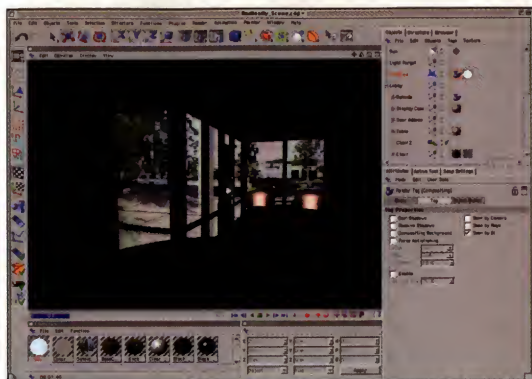
Create a new target light by choosing Objects>Scene>Target Light, and name it 'Sun' in the Attributes>Basic Properties pane in the Object Manager. Under the General pane, change the light type to Parallel, and make the colour to a light yellow, using R=100 per cent, G=100 per cent, B=96 per cent, and Br=170 per cent. Set the shadow to Hard.

STEP
9

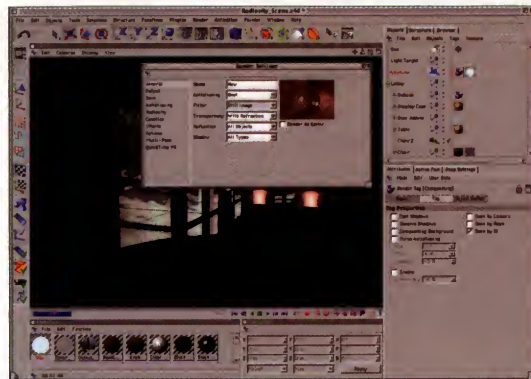
Obviously, in real life you don't have a solar body inside the room, so we'll need to position the sun outside of the room and above. To do this, select the Sun object in the Objects pane, and click the 'Coord.' button in the Attributes pane. Set the position to X=-1,100m, Y=700m, and Z=400m.

STEP
10

That's the lighting for the scene completed – but, when you select Render>Render View you'll notice there is no lighting illuminating the scene. That's because we've moved the sun outside the Skydome object. To fix this, we need to add a Compositing tag to the Skydome object. This illuminates the scene without showing the Skydome.

STEP 11


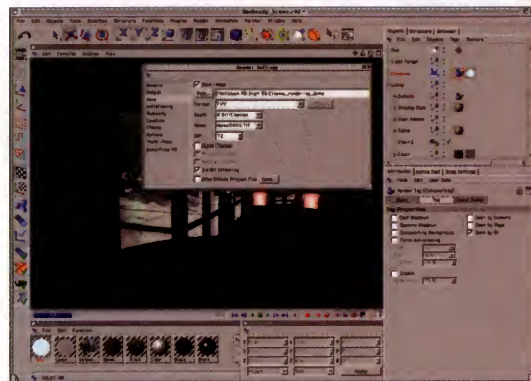
Start by selecting the Skydome object in the Objects pane in the upper-right, then choose **File>New Tag>Compositing**. In the Attributes pane (lower-right), click the Tag button, and disable all the attributes apart from 'Seen by GI'. This tells Cinema 4D that this object should contribute to the global illumination of the scene, but nothing else.

STEP 12


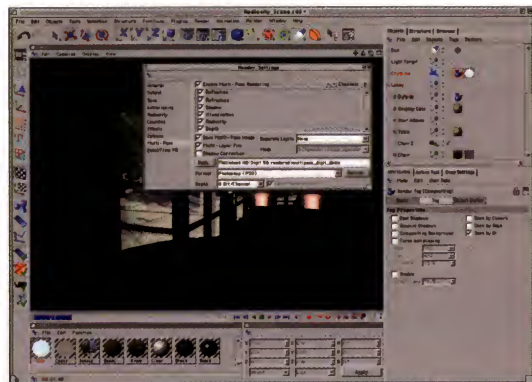
Next, we need to set up the raytracing of this scene. To do this, choose **Render>Render Settings** to open the Render Settings dialog. Set the Antialiasing pop-up menu to 'Best', and set the Filter pop-up to 'Still Image'. Leave all the other settings at their highest level, as there is no increase in rendering time unless they occur in the scene.

STEP 13

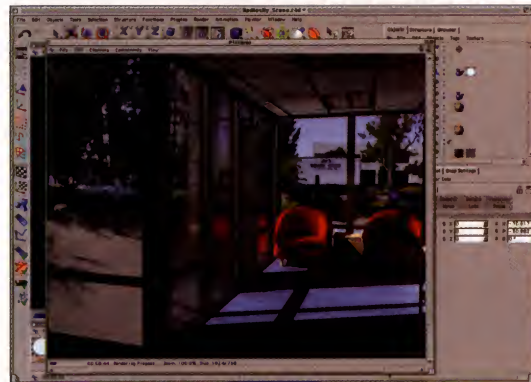

Go to the Output channel, and set Film Format to HDTV with an aspect ratio of 16:9, and set the resolution to 1,024-x-768. Next, go to the Radiosity channel, and enable the Radiosity option. Set the strength to 200 per cent – this will double the effects that radiosity has on the scene – and leave Accuracy at 70 per cent and set Diffuse Depth to 3.

STEP 14


Finally, set the Stochastic Samples to 200, and the Resolution to Min 100, and Max 200. Doing this gives higher precision on corners. Next, go to the Save channel, and set the picture format to TIFF, then click the Path button and select a location and name for the rendered image, and click Save.

STEP 15


Multi-pass rendering is an important feature for output, as it allows an image to be saved for each channel that we set. Then, if one aspect of the scene changes that does not affect every channel, you don't need to re-render every channel again. Go to the Multi-Pass channel and enable Multi-Pass Rendering, then choose a location to save the images.

STEP 16


Save the document in the Multi-Pass channel as a Photoshop PSD document, then you can open it in Photoshop with each channel as a layer. Now we're done. The only thing left is to click the Render To Picture Viewer button to begin rendering. It should take around 20 minutes on a 1GHz computer with 256MB of RAM.



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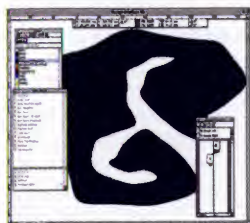
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Design solutions



A path to Quark

Using Opt/Alt while working with paths lets you delete points.

→ Tip of the month

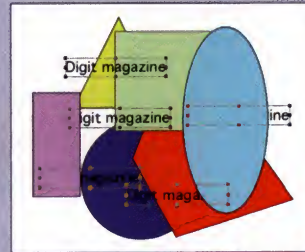
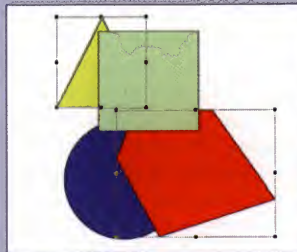
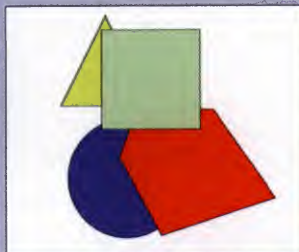
Limiting selections to single object-types in Deneba Canvas 8.0

If you've ever been flummoxed by selections in Canvas 8.0, here's a neat little trick.

We want to select the shapes created with the polygon tool (the yellow triangle and the red shape).

Shift-clicking on each with the selection tool would work fine in this instance but, on more complex illustrations, would be a real chore – or just impossible. Instead, select the polygon tool in the toolbox, and

Select all (Cmd-A on the Mac; Ctrl-A on Windows PCs). The same trick also works for text objects. Note, though, that you may have problems if you've extensively modified any of your shapes.



What the F in Premiere?

Premiere lets you customize the F-keys to choose options in menus. To change a feature, under the pop-up menu (highlighted with the circle) disable Button Mode. From there, double-click an existing command (to change its option) or click the New button at the bottom of the palette. When the Command Options window opens, choose a new command from a menu and Premiere will update the 'Command:' field. Give the command a name, choose a function key and colour (if desired), and then click OK.

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→ Graphic design

Bin and gone

When deleting pages from QuarkXPress's Document Layout palette, you're met with an 'Are you sure?' dialog every time. To avoid it, hold down the Opt/Alt key when dragging a page to the trash icon.

Speedy sliders

If you can't get an Adobe Photoshop slider exactly where you want it using the mouse and you don't know the precise percentage value you want, there's an alternative.

Click the arrow icon next to the value (usually Opacity or Fill) in the palette, then use the arrow keys to move the slider one per cent at a time. Hold down the shift key while pressing the arrow keys to move it by ten per cent each time.

Font of knowledge, part I

Macromedia Fontographer is strict when it comes to PostScript's on-screen outline display. Both Type 1 and TrueType fonts use a winding fill algorithm to display and print fonts. The algorithm works its way across the screen, filling everything from the outermost path to the innermost.

But here's where errors can creep in: the outer path must be clockwise if the fill is to work correctly. Likewise, the inner path must be anti-clockwise. To check that everything is as it should be, click on a path. The arrow at the bottom-left corner of the outline window will point left for anti-clockwise, and right for clockwise.

More than meets the eye

If you want to transform a copy of an object in Photoshop, there's no need to go through a whole load of menus and separate steps.

Simply select the object, and press Cmd-Opt-T (Mac), or Ctrl-Alt-T (Windows). The object will be copied, and the Free Transform tool accessed.

The copy is placed on the same layer as the original until you've completed a transformation – then it appears on its own layer.

Font of knowledge, part II

To convert a character to outline in Fontographer, deselect it by clicking in the empty area around it, then de-activate Preview mode, and double-click the outermost path.

Select Element>Expand Stroke,

expanding it by at least five ems so you can see it easily. Use lower values when you become more confident.

A new path appears around the edges of the previously selected one. Double-click it, and expand its stroke by a further five ems. This should produce a fill in between the strokes you've widened – yet leave the character itself empty.

Now, check the direction of the path: select Element>Correct Path Direction. To change its direction, double-click it, and set it via the Element menu.

XPress point punt

For more control over freehand boxes in QuarkXPress, press Shift-F4. This allows you to edit all points on a path. What some people don't know, though, is that holding down the Opt/Alt key while passing the cursor over a point turns it into a crosshair. Click the point with the crosshair to delete it, as in Photoshop.

Quick Photoshop tool toggle

To switch from Photoshop's Pen tool to path tools, Press A (or Shift-A) to toggle between Direct and Path Selection.



Multimedia

Shadow glow flicker in Maya

If you're troubled by shader glow flicker on the render of your animation from Maya, try turning off the auto exposure feature. This is found in the Multilister, in the shaderGlow material – it's on by default, and attempts to make glows look good on an individual frame basis. You may also have to re-adjust the glow and halo intensities.

Premiere panic

If you accidentally erase a project file, don't panic. Each time you save a project, Premiere saves over the file you're currently working on, but it will also save a copy of the previous version in its Project Archive folder, located in the application folder. Project files are tiny compared to video files and they're worth any extra disk space they occupy. In Preferences (General and Undo), you can specify how many versions of a single project Premiere will keep an archive of, and the total number of archives Premiere will keep.

Give me a J, give me an L

When editing clips in Premiere's Source window, holding down the Opt/Alt key and dragging the In and/or Out points will split them into separate Video and Audio In/Out points allowing for an L or J cut before the clip is even in the timeline. While the modifier key is held down, the in and out points for audio and video are edited separately. Once released, they will move together with an offset.

Audio logic

For anyone editing sound in Adobe Premiere, the small workspace in the audio track doesn't give you much in the way of precision. But, there is a fix. Holding down the Shift key while adjusting points in the audio rubber band will give you increments of one per cent and display a delta or offset value next to the adjustment. The Fade Scissors tool will automatically insert two control points that can be moved farther apart.



Web design

Going Loopy in Flash MX

When working with sound in Macromedia Flash MX, you'll be familiar with using the Loop option to set the number of times a sound file repeats. Flash links looped sounds and handles them as one long sound file. As this linkage is held within the editing environment, the entire length of a looped sound can be given a custom effect in the Edit Envelope. This can result in subtle effects that work well such as, for example, a simple repeating two-measure loop that diminishing say over 30 loops – but it applies only to Event sounds.

Invisible objects

In Dreamweaver MX, when you insert an object that's classified as Invisible, such as a Comment or Named Anchor, the program by default inserts an icon to show the object's placement. This can be somewhat distracting, but Dreamweaver lets you turn them all off using the toggle command, View>Visual Aids>Invisible Elements. If an Invisible object is turned off in Preferences, it will not be shown

regardless of the status of the View menu command.

Reducing old-page text size

When opening pages in GoLive 6 that were created in older versions of the application, you may find text appears larger than expected. This is because version 6 uses 96dpi as the default resolution for rendering text in Layout mode – this is the W3C recommendation and what most current Web browsers use. What you now see in Layout mode is a more accurate representation of what your visitors will see.

To ensure your text renders more consistently across platforms and browsers, use CSS to set font sizes in pixels. You can, however, force GoLive 6 to render fonts in the non-standard way by opening Settings>UserAgentProfiles>AdobeGoLive/AdobeGoLive.agluap. Find the line that reads:

```
[var name="dpi" value="96"/]  
and change it to  
[var name="dpi" value="72"/]
```

Then quit and relaunch GoLive 6.



Digital video

Getting the most from Adobe After Effects

Here are a few tips and tricks to speed your work and aid your creativity in After Effects:

Quicker RAM previews

Press Shift-0 to play every other frame in a RAM preview – useful for quick looks at how things are progressing.

Hide & seek

Hide everything in the Comp window (such as layer handles, motion paths, and so on) by pressing Cmd-Shift-H (Mac), or Ctrl-Shift-H (Windows).



Give it a twirl

You may already be familiar with the keyboard shortcuts for twirling down Properties in the Timeline – but here's a new twist: press the key twice in quick succession to open all properties under the heading. Pressing 'A' twice, for example, will open all the Material options for 3D layers. Add the Shift key to a single press, and you'll be able to add and subtract Properties.

Precomposing

Some compositions can quickly become incredibly complex. If you find yourself getting lost, use After Effects' precompose command (Layer>Pre-compose).

This creates a fresh comp containing all the layers you've nested, meaning that your initial comp is left untouched, and letting you render layers in a different order. The new comp takes the place of the selected layers, and is placed in the project window – so you can

use it in any new project.

Precomposing can be used to trim a composition to the length of the work area, too. If you've used the command on a number of short layers, there will likely be a long, empty space at the end – the new comp will be the length of the original work area.

To trim this extra space, select the layers to precompose, and press Cmd-Opt-B (Mac), and Ctrl-Alt-B (Windows) to set the work area to just the selected layers.

Now choose Layer>

Pre-compose, then Move All Attributes. Check the Open New Composition button to add the precomp as a tab.

Choose Composition>Trim to Work Area, and bring the precomp back to the front. Because the time marker is now incorrect, press Shift-Home to move it to the start of the work area. Hit the left square bracket key – [– to move the precomp to this time.

This method differs to the Leave All Attributes In command in the precompose dialog, in that the latter leaves the selected keyframes and layer properties in the original comp.

Leave All Attributes In should be selected when you don't need to render layers in a different order.

Step back into line

If you inadvertently nudge some full-frame video off-centre, you can quickly re-align it by pressing Cmd-Opt-F (Mac), or Ctrl-Alt-F (Windows). This command will fit smaller video frames to the Comp's full size.

Camera moves

Hold down the Cmd key (Mac), or the Ctrl key (Windows) to move a camera or light along one of its axes without changing its point of interest – a handy timesaver.

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Products reviewed

Barco Reference Calibrator V

Eizo FlexScan T966

Iiyama Vision Master Pro513

LaCie Electron22blue III

NEC-Mitsubishi Diamond Pro 2070SB

Samsung SyncMaster 1200NF

Sony Multiscan F520

Viewsonic P220f

professional CRT monitors

LCD displays may be fast improving, but if you want confidence in your on-screen colour, then a desk-conquering CRT is what you need.

By Neil Bennett



08

EGO: ATRIUM REGION 65

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08

EGO: ATRIUM REGION 65

From the amount of coverage that slim, sexy LCD displays have garnered in the last year, you'd assume that the poor old CRT has had its day. But if you're a print graphics professional – or any high-end creative – then a CRT is the only way to be sure of what you're dealing with.

If you care about colour, a CRT monitor is essential. Unlike LCDs, CRT monitors can deliver the range of colours and accuracy required for going to the trouble – and expense – of colour-calibrating input devices (such as scanners) and output devices (such as proofers and the monitor itself). Also, almost all of the colour-calibration and management solutions on the market are designed for CRT monitors – though LCD-specific set-ups have been created, such as Formac's LCD monitor/Pantone Spyder. Furthermore, 21- and 22-inch CRTs offer high resolutions that would cost many thousands of pounds to obtain in an LCD screen.

The greatest change in the CRT market in the last year has been another substantial drop in prices. Two years ago, the lowest-priced professionally usable 21- or 22-inch CRT monitor was £535. Last year, it was £489. At the end of 2002, you can now pick up the most basic pro-level model for only £369. The average price has followed the same path from around £800, to £749, to around £550. These averages don't include Barco's specialist monitors, which have a high price that would significantly throw off the average.

The features that define a truly professional CRT display begin with colour clarity and control. Hardware-based colour calibration systems are the best way (see calibration boxout on page 101), but if these are too expensive or otherwise unnecessary, a software system or just a good set of eyes should be fine. Whatever

way you work, you'll need a monitor that offers the range of colours, contrast, and brightness that shows off your work well. Testing a monitor for this is a subjective experience (see Beyond the test card, below). Some modern monitors let users control the monitor's settings from their computer, as Apple does with its LCD displays. This usually only works on Windows PCs with graphics cards that support DDC/CI (Display Data Channel/Command Interface), though some use USB.

Image clarity is as important as colour perfection. This requires a finely detailed, high-resolution picture, matched with a stable frequency rate. The level of detail and resolution are created by a combination of the internal tube and the controlling electronics. A few years ago, a battle raged between two types of tubes, aperture grille (which use thin wires to separate pixels), and shadow mask (which use metal plates with holes). Now, almost all manufacturers use an aperture grille system – either Mitsubishi's NF (Naturally Flat) or Sony's Trinitron tubes. These flat screens have almost wiped out other tube types by defeating the age-old bane of CRT monitors: TV-style, curved screens. In our group test, five of the monitors use the NF tube, with Sony using its own Trinitron tube. Eizo gains impressive results from a shadow mask on the FlexScan T966. Barco doesn't give two pixels for flatness, using the bendy, Matsushita-designed shadow mask tube.

While there are few tube manufacturers, it's the branded, company-supplied electronics that drive the tubes and make all of the difference between a flickery top resolution of 1,800-x-1,440 pixels and seemingly static 2,048-x-1,536 output. CRTs refresh their screens many times a second: the faster they refresh, the more this tricks the eye into believing that a static picture is being viewed – and the less strain this places on the user's eyes. Put simply, a faster refresh rate means less headaches. 85Hz is good enough for most users to cope with all day, though faster frequencies can be useful if you're particularly sensitive to flickering. Most monitors featured here can output at 85Hz at 1,600-x-1,200 resolution, but few can match this at 2,048-x-1,536.

Also worth noting are the maximum viewable image size and the dot pitch (the spacing between pixels). Larger images/pitches give individual pixels more clarity, making for crisper picture quality.

Beyond the test card

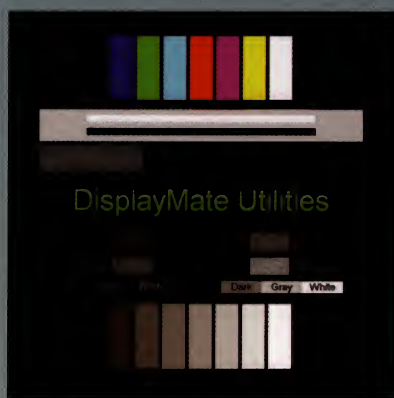
Unlike workstations or graphics cards, monitors are the part of the display process that can't be tested scientifically. It's a subjective experience that relies on the eyesight of the reviewer (and should never be attempted with a hangover or by those prone to migraines).

However, there are applications that can help differentiate a constant and trusted monitor from something you want to 'accidentally' drop so you can go buy a new one. Most of these are commercially available and **DIGIT** recommends that unless it already ships with one, you buy one to set up your monitor to its fullest potential.

Our test tool of choice is DisplayMate for Windows Multimedia Edition, which is available for \$495 (around £320) from DisplayMate www.displaymate.com. However, most **DIGIT** readers will likely gain more value

from the standard version of the product, which only costs \$79 (around £50).

DisplayMate Multimedia Edition automatically generates test patterns to fit each individual display. It can work with resolutions up to 4,096-x-4,096 pixels, and with aspect ratios from 0.5 to 3.3 – which includes conventional 4:3 and widescreen 16:9 ratios. It includes over 300 test patterns, and 200 additional test-pattern variations.



Different modes

A new feature on many larger CRT displays released in 2002 is the ability to switch between different modes for different ways of working. These adjust brightness, contrast and colour temperature to make working with text, graphics, or video easier. Some mimic the feature found on many DVD players that enhances the appearance of black areas to improve video quality, especially at a distance. Some even allow the sharp, pixelated nature of the high-resolution CRT to be blurred slightly to mimic the output of a TV set, again improving video playback.

Other factors to consider when choosing a monitor include connectivity options; and size and weight. Dual inputs are necessary if you want to use two computers with a single screen. All the monitors featured here have dual inputs, but they are split between those with two VGA inputs and those with one VGA and a set of BNC connectors. Some manufacturers, such as Barco, swear by colour provided by the five separately shielded BNC leads. Others, such as LaCie, consider BNC an anachronism without benefits, as the output from your graphics card will be VGA anyway. The jury's still out on this one. A button on the monitor's faceplate for changing inputs is a requirement if you switch regularly. A built-in USB hub can be tidier than a separate unit – some also allow control over the monitor's settings from within Windows (Mac users are generally out of luck here).

Warranties should be at least three years long, as are those for all the monitors featured here. However, the differentiating factor is between those companies that will fix your monitor on-site or exchange it for you, and those that require you to return it to base (RTB) for repairs.

Reference Calibrator V

Price: £3,250 plus VAT

Company: TypeMaker, www.typemaker.co.uk

Contact: TypeMaker, 0121 604 1234

DIGIT rating:



Specifications:

- 20-inch viewable area
- 1,600-x-1,200-pixel maximum resolution
- Hardware calibrator as standard

Barco's Reference Calibrator V is both the best and worst monitor in our round up. If it's colour perfection that you require, there's nothing to match this display. On the downside, the Calibrator V is about two years out of date, and could do with a major overhaul. It's also prohibitively expensive.

The reason for the steep price is that every monitor ships with an OptiSense spectrophotometer that is tuned precisely to the CRT and controlling electronics. The monitor's colour characteristics are measured to an extremely high degree at the factory, and this is stored on an internal ROM chip. This allows the monitor to output enough colour detail to let a user spot a white rabbit in a snowstorm.

The only thing that's changed about this monitor since its launch has been the recent, very belated launch of an OS X version of the CalibratorTalk software. Since the Reference Calibrator V's first appearance, we've seen the launch of flat-screen tubes – which

are available in monitors almost a tenth of the price of the Calibrator V – and stability at resolutions above 1,600-x-1,200 pixels. This monitor's tube is curvier

than Marilyn Monroe – and considering how many years this display has been around, it's a travesty that Barco haven't replaced the old Matsushita tube with a Diamondtron NF or Trinitron CRT.

Of course, users that have to have completely perfect colour to match a full-spec colour management system will must work with this monitor, but most should steer well clear.



FlexScan T966

Price: £519 plus VAT

Company: Eizo, www.eizo.co.uk

Contact: Eizo, 01483 719 500

DIGIT rating:



Specifications:

- 19.6-inch viewable area
- 2,048-x-1,536-pixel maximum resolution
- Five usage modes

With the T966, it's the added extras that impress most. It supports Epson's PIM II and EXIF 2.2 technologies, so your images should have consistent colour from digital camera to printer – assuming your camera and printer support these technologies, which currently limits you to Epson products. There are five adjustment modes – text, browser, picture, graphic, and movie – that change the colour temperature, brightness and contrast to, for example, keep colours natural for image-editing, or boost brightness for watching movies from a distance. These generally work well, and there's an extra sRGB mode for users of Microsoft's colour-management system.

Other hardware-based technologies include the ability to reset the monitor to the factory settings. This sounds good, but as the settings take months to drift, we had no way of checking how successful this is. There's also automatic colour-correction to compensate for difference between inputs from two computers.

Software controls include DesktopViewer, which niftily lets you boost the brightness of a bitmap image; WindowMovie for boosting video brightness and clarity of windowed-video alone; ActiveGamma for tying modes to applications; and ScreenManagerPro for software control over on-screen display (OSD) features through the USB hub. These are great tools, though they are all Windows-only.

The T966 doesn't have the flattest screen around, and its colour reproduction is, sadly, less than sparkling without the added wizardry.



Vision Master Pro513

Price: £369 plus VAT

Company: Iiyama, www.iiyama.co.uk

Contact: Iiyama, 01482 745 482

DIGIT rating:



Specifications:

- 20-inch viewable area
- 1,800-x-1,440-pixel maximum resolution
- Two VGA inputs

The price of CRT displays has dropped dramatically over the last few years, but it was still a surprise to find that Iiyama's pro-level 22-inch monitor costs £369. What's more, the company has managed to include some impressive components, though the old adage of 'you get what you pay for' does apply here.

The Pro513 is constructed around Mitsubishi's 22-inch Diamondtron NF tube, the same piece of glass as used in the majority of the more expensive monitors in the round-up. However, Iiyama hasn't exactly pushed it to its limits. While the recommended resolution is a perfectly respectable 1,600-x-1,200 pixels at a refresh rate of 85Hz, this monitor tops out at only 1,800-x-1,440 – not great if you ever want to view your work at super high-resolution.

Another feature associated more with higher-end CRT displays is a movie mode called OPQ. This is designed to mimic similar functions on many DVD players that go towards improving the

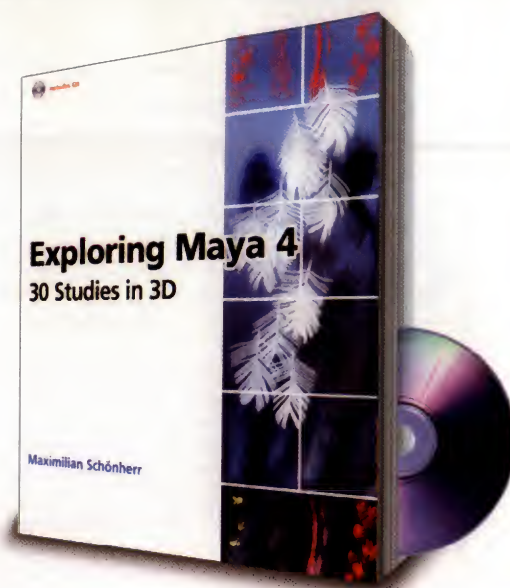
appearance of black areas of the screen. We didn't really notice much of a difference with the OPQ mode, but the effect can be very subtle even on top-notch DVD boxes.

Even though the Pro513 has a great tube and interesting extras such as the OPQ mode, Iiyama's own electronics don't do this justice. Fine detail such as 8pt text was particularly poor when compared to the competition, and colours were on the washed-out side.



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Electron22blue III

Price: £699 plus VAT

Company: LaCie, www.lacie.co.uk

Contact: LaCie, 020 7872 8000

DIGIT rating:



Specifications:

- 20-inch viewable area
- 2,048-x1,536-pixel maximum resolution
- Optional BlueEye calibrator

The first two generations of the Electron22blue (or Electron21blue as it once was) broke new ground on just how good a CRT monitor could be. Features-wise, the third iteration is more of a nip and tuck, but it does deal with one of the major downsides of CRT – size.

The Electron22blue III is noticeably smaller than all of the other 21- and 22-inch displays on test here. It isn't any lighter, so moving it around isn't any easier, but it doesn't loom menacingly over the rest of your desk as much, and gives you more space for slashed up art mags and novelty gonks.

This monitor's picture quality is exceptional, bested only by Sony's Trinitron-based F520. The F520 provides a more stable picture than LaCie's display at both the standard 1,600-x1,200 and top 2,048-x1,536 resolutions. However, the Electron22blue III is more than good enough for the vast majority of designers – so at £70 less than the F520, it offers better value for money. New additions such as picture modes as good, but can be unnecessary.

The monitor also includes a matte blue case that really helps to show up your work on-screen, a hood to block ambient light, and the optional £279 plus VAT BlueEye hardware calibration system.

Now cross-platform through combining a Pantone Spyder with LaCie's own software, it delivers better results than Sony's bundle with GretagMacbeth.

Buying the Electron22blue III and the BlueEye is about £90 cheaper, too.



Diamond Pro 2070SB

Price: £499 plus VAT

Company: NEC-Mitsubishi, www.nec-mitsubishi.com

Contact: NEC-Mitsubishi, 020 7202 6300

DIGIT rating:



Specifications:

- 20-inch viewable area
- 2,048-x1,536-pixel maximum resolution
- Four downstream USB ports

You'd think NEC-Mitsubishi would know a thing or two about CRT displays, as the company makes the tubes used by the vast majority of the manufacturers featured in this round up. And you'd be right. The Diamond Pro 2070SB isn't in the same league as LaCie's or Sony's entries into this field, but for the price, this monitor offers just as much value.

For the £500 outlay, a user gets a stylish display that's just as happy at its top 2,048-x1,536-pixel resolution as it is at the more standard 1,600-x1,200. The 2070SB can match any other monitor when it comes to displaying clear, crisp detail such as low point-size text. The colour representation is good rather than great, but if you want better you're going to have to pay at least £200 more for the Electron22blue.

The 2070SB offers three picture modes: standard; a brighter mode for pictures (though more for showing off your designs to an audience than working in Photoshop); and a very bright mode for

video playback. NEC also offers a Brightness Controller tool for brightening only windowed video. Expect to see the SuperBright Diamondtron tube to appear in next-gen displays across the board.

The 2070SB is bundled with NEC-Mitsubishi's NaViSet software, which allows control over OSD functions through the Windows display settings. Again, Mac users are left out, and the system works only with modern DDC/CI-compatible graphics cards.



SyncMaster 1200NF

Price: £489 plus VAT

Company: Samsung, www.samsungelectronics.co.uk

Contact: Samsung, 01952 297 628 (fax only)

DIGIT rating:



Specifications:

- 20-inch viewable area
- 2,048-x1,536-pixel maximum resolution
- Four downstream, two upstream USB ports

The SyncMaster 1200NF has been around for a while now – left at the top of Samsung's CRT range while the company got on with more trendy LCD displays and consumer electronics. And though there are a few nice touches and extras, there are other contenders around the same price – especially NEC-Mitsubishi's Diamond Pro 2070SB – that do better at the base job of providing a clear, colour-accurate, and stable image.

The best thing about the 1200NF is the bundling of LightSurf's Colorific calibration software. Though not as good as a spectrophotometer-based system, this uses a piece of blue-grey plastic for comparison, and relies on the user having good eyes (and being designers, we should have).

Other notable features include dual-USB inputs for sharing peripherals across two computers, and a software tool for controlling the monitor's OSD functions – although again this is for Windows users only. On the downside, the 1200NF is one of the

ugliest shades of beige we've seen in a long time – although the shape is okay, so a quick respray could sort things out – and the picture quality didn't impress.

Tests found that circle geometry wasn't perfect in some areas of the screen on the 1200NF, and that bright colours produced a slight, but noticeable, halo.

After using Colorific, however, the colour output was great, but fine detail was still a problem.



Multiscan F520

Price: £769 plus VAT

Company: Sony, www.sony-cp.com

Contact: Sony, 0990 424 424

DIGIT rating:



Specifications:

- 19.8-inch viewable area
- 2,048-x-1,536-pixel maximum resolution
- Three usage modes

Sony may have a reputation for stylish consumer products, but with the Multiscan F520, the company has created a product aimed directly at the professional – and built the best CRT display on the market. However, power comes at a price. With the exception of Barco's ultra high-end display, the F520 is the most expensive monitor on show here – even £70 more than LaCie's top-notch Electron22blue III.

The F520 breaks away from the dominant Mitsubishi Diamondtron NF tube, using Sony's own Trinitron – similar to that used in the company's popular line of televisions. Sony uses a lot of acronyms to describe its monitor technology – from L-SAGIC and DQL to BLC and BDC – but suffice to say that they combine to produce a pin-sharp picture with excellent colour representation.

This monitor can refresh the screen at up to 110Hz at 1,600-x-1,200 pixels – so it's noticeably more stable than any other display in our round-up. Even at the top resolution of 2,048-x-1,536

pixels, it produces a perfectly usable 86Hz.

Other features worth mentioning here include three display modes: a standard mode for Web surfing and the other non-design work that we all have to do; a brighter mode for group presentation; and a professional mode for working in a calibrated environment.

Users can pick-up the F520 in a bundle with GretagMacbeth's Eye-One hardware calibration system for £1,069 – but it isn't as integrated as LaCie's own-software driven BlueEye.



P220f

Price: £445 plus VAT

Company: Viewsonic, www.viewsonic.co.uk

Contact: TypeMaker, 0121 604 1234

DIGIT rating:



Specifications:

- 20-inch viewable area
- 1,800-x-1,440-pixel maximum resolution
- Two VGA inputs

Like Samsung's SyncMaster 1200NF, the P220f is another less-than-sparkling monitor, improved by the inclusion of some great calibration software. Like the 1200NF, the P220f ships with LightSurf's Colorific package. Hardware-based calibration systems use sophisticated measuring equipment to check that what the monitor thinks it's outputting is the same as what it actually is. Colorific uses the viewer's eyes and piece of blue-grey plastic – so the results aren't as precise, but are generally good enough if you assume that eyes good enough to be a designer are good enough to match colours and intensities.

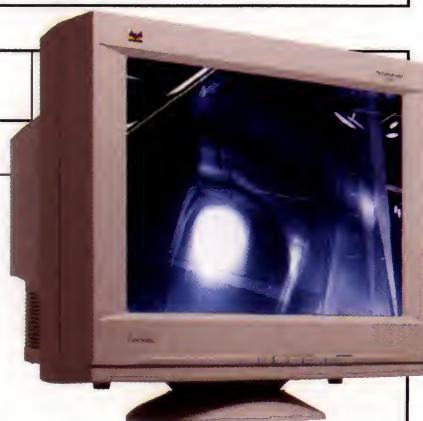
The P220f is less expensive than the SyncMaster 1200NF, but if you add the optional four-port USB hub, the prices just about equal out (the 1200NF has a USB hub as standard).

Features-wise, the P220f is underwhelming. At the standard 1,600-x-1,200-pixel resolution, this monitor displays images at a perfectly fine refresh rate of 85Hz – but at the top resolution of

1,800-x-1,400, this drops to a usable – but not great – 75Hz.

We didn't have problems with the P220f's geometry or colour handling per se, but the monitor had the worst problem here with haloing around white text on black backgrounds. The top left of the screen was faded compared to the rest of the display, though that could just have been our test unit.

Overall, most designers would benefit far more from spending an extra £50 on NEC-Mitsubishi's Diamond Pro 2070SB.



Products at a glance



Manufacturer Model Price (excluding VAT)	Barco Reference Calibrator V £3,250	Eizo FlexScan T966 £519	Iiyama Vision Master Pro513 £369	LaCie Electron22blue III £699	NEC-Mitsubishi Diamond Pro 2070SB £499
DIGIT Rating					
CRT size (inches)	21	21	22	22	22
Max viewable size (inches)	20	19.6	20	20	20
Refresh at maximum res	85Hz at 1,600-x-1,200	80Hz at 2,048-x-1,536	75Hz at 1,800-x-1,440	80Hz at 2,048-x-1,536	86Hz at 2,048-x-1,536
Refresh at recommended res	85Hz at 1,600-x-1,200	104Hz at 1,600-x-1,200	80Hz at 1,600-x-1,200	85Hz at 1,800-x-1,350	85Hz at 1,600-x-1,200
Tube type	Shadow mask	Tension mask	Aperture grille	Aperture grille	Aperture grille
Tube manufacturer	Matsushita	Sony	Mitsubishi	Mitsubishi	Mitsubishi
Dot pitch (mm)	0.25	0.24	0.24	0.24	0.24
Calibration	Hardware	Software profiles	Software profiles	Software profiles *	Software profiles
Built-in modes	1	5	2	1	3
Inputs	VGA/BNC	VGA/BNC	2x VGA	2x VGA	2x VGA
USB ports	3x down, 1x up	4x down, 1x up	None	3x down, 1x up	4x down, 1x up
Size (WxHxDmm)	500-x-502-x-501	494-x-486-x-520	493-x-487-x-479	495-x-493-x-473	500-x-500-x-482
Weight (kg)	43	36	28	31	31
Warranty (years)	2 for unit; 1 for tube	1, on-site; 2, RTB	3, on-site	3, on-site	3, on-site

* Bundles with hardware are available.

Colour-calibration hardware: what to look for in a solution

If you want complete control over your on-screen colours, software can only take you so far. If you want to be sure that the image you see is the same as that scanned in or captured on a digital camera – and the same as that which will appear on your printer – you need hardware backup.

Software-based calibration relies on the eyes of the designer to adjust sliders and dials to make images appear and disappear, and to match external plastic calibration plates. These have the flaw that, because they rely on eyes, anything you miss when setting up your monitor is unlikely to show up later.

Hardware-based systems combine a light-measuring spectrophotometer that usually clips to the front of the monitor, with software for Mac, Windows, or both. Information on colour and intensity is taken from the device and used by the software to adjust the monitor to generate the correct output, which is then tested again. The feedback loop continues until the output is perfect.

There are many different solutions available from a variety of manufacturers, but the number of different spectrophotometers is few – and the actual device shipped with a system can change with time. For example, both LaCie's BlueEye and TypeMaker's Colour Confidence Studio shipped with ColorBlind's calibration device, but have recently started using Pantone's Spyder. What differentiates the solutions is the software – especially as both software and hardware are generally available separately, allowing users to mix and match. Some software is tied to particular displays, such as the BlueEye, but most programs are more generic, and can be used to calibrate the usual group of monitors from mixed manufacturers that exist in the average office.

Barco's calibration system is not covered here, as it ships only with the company's own monitors. More details can be found in the review of Barco's Reference Calibrator V on page 97.

BlueEye

Platform: Win/Mac
Price: £279 plus VAT
Company: LaCie, www.lacie.co.uk
Contact: 020 7872 8000

The BlueEye system combines a spectrophotometer, currently Pantone's Spyder, with LaCie's own software, which has recently become cross-platform. The system works only with LaCie's own Electron19blue III and Electron22blue III monitors.

ColorBlind Prove it! with calibrator

Platform: Win/Mac
Price: £295 plus VAT
Company: ITEC, www.color.com
Contact: TypeMaker, 0121 604 1234

ITEC's E40 ColorBlind Prove it! is the most popular colour-calibration software on the market, working with devices from companies including Avantes, X-Rite, GretagMacbeth, LightSource, and Minolta – as well as the company's own calibrator.

Spyder

Platform: Win/Mac
Price: From £329
Company: Pantone, www.pantone.com
Contact: XChange International, 020 7588 5588

The Spyder is available in six different suites, aimed at everyone from photo enthusiasts to advanced pre-press professionals. The suites mix and match the PhotoCAL monitor-profiling

application and its more powerful OptiCAL brother, ProfilerPLUS and ProfilerPro printer calibration tools and other market-specific applications.

Spectrolino / Spectrolino 8mm

Platform: Win/Mac
Price: £2,800 plus VAT
Eye-One System
From £472 plus VAT
Company: GretagMacbeth, www.gretagmacbeth.com
Contact: 0151 327 3290

The Spectrolino and its 8mm-apertured brother can be used on monitors, colour proofs, or film and transparencies. It works with GretagMacbeth's own SpectroChart lite software.

The Eye-One System is available in three versions: Monitor, for pure colour-management (with no hardware); Pro, for monitor calibration (with both hardware and software); and Pro with Eye-One Match, which adds input- and output-device profiling.

Colour Confidence Studio

Platform: Mac
Price: £395 plus VAT
Company: TypeMaker, www.typemaker.co.uk
Contact: TypeMaker, 0121 604 1234

This is designed as an introduction to colour-management for those put off by its technicality. The Studio includes a spectrophotometer, again currently Pantone's Spyder, with calibration software; an introductory guide to

colour management; Mac-only profile-management software; and a reference print. Colour Confidence Studio is reviewed on page 55.

DTP 92 Monitor Optimizer

Platform: Win/Mac
Price: £440 plus VAT
Company: X-Rite, www.xrite.com
Contact: TypeMaker, 0121 604 1234

The DTP 92 uses ITEC's ColorBlind Prove it! software. It's available with a serial or USB connection.

Spectrocam

Platform: Win/Mac
Price: Non-UV, £975 plus VAT;
UV, £1,050 plus VAT
Company: Avantes, www.avantes.com
Contact: TypeMaker, 0121 604 1234

The Spectrocam (below) is more than a monitor-calibration device – hence the high price. It can also be used to scan prints for creating printer profiles; as a spectral camera for determining colour temperature; and as a general colorimeter and densitometer.

The Spectrocam works with ITEC's ColorBlind calibration software.



Samsung SyncMaster 1200NF £489	Sony Multiscan F520 £769	Viewsonic P220f £445
22	21	22
20	19.8	20
80Hz at 2,048-x-1,536	86Hz at 2,048-x-1,536	75Hz at 1,800-x-1,440
85Hz at 1,600-x-1,200	110Hz at 1,600-x-1,200	85Hz at 1,600-x-1,200
Aperture grille	Aperture grille	Aperture grille
Mitsubishi	Sony	Mitsubishi
0.24	0.22	0.25-27
Colorific, software profiles	Software profiles *	None
1	3	1
VGA/BNC	VGA/BNC	2x VGA
4x down, 2x up	4x down 1x up	optional
500-x-476-x-510	497-x-499-x-487	508-x-502-x-500
31.5	30.5	30.5
3, on-site	3, RTB	3, on-site



DIGIT Buyers Guide



At-a-glance product listings of every hardware and software product reviewed in the past 12 months

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DIGIT Best Buys



Armari RH860HT

This machine, thanks to its hyper-threading technology, acts as though it has four processors rather than two. It's blisteringly fast and immensely powerful.



Dell Precision M50

Thanks to its NVIDIA Quadro4 500 Go GL graphics card and mobile Pentium 4 processor, this laptop is capable of delivering unsurpassed power and speed.

TOP FIVE WORKSTATIONS

The most recently reviewed workstations to be awarded a Digit Best Buy logo are:



Apple Power Mac G4 1GHz

Armari RH860-T

Celsius Mobile H

Dell Precision M50

Evolution Powerflex AQ1900D

Workstations

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
3DBOX R1	4.0	MAR 02	Windows	£2,995	Reality Computing	reality-comp.co.uk	Reality	01483 202 051
A solid – if unexceptional – performer with two Athlon MP 1800+ chips, 1GB RAM, 18GB SCSI hard drive, and ATI Fire GL2 graphics card								
Celsius Mobile H	4.5	JUN 02	Windows	£3,499	Fujitsu-Siemens	fujitsu-siemens.co.uk	Fujitsu-Siemens	01344 475 00
A monster machine at a monster price – however, the machine's many security features are good for the corporate market, but not for creatives								
Dimension 8200	4.0	JUN 02	Windows	£1,737	Dell	www.dell.com/uk	Dell	0870 152 4699
A powerful Windows desktop for those who don't need workstation power. It has a large hard drive and a fast chip								
Inspiron 8200	4.0	AUG 02	Windows	£2,242	Dell	www.dell.com/uk	Dell	0870 152 4699
A powerful laptop with great graphics and lots of options, though battery life is a little short. Higher-end users may want to look at the Precision M50								
OmniBook 6100	4.0	JUN 02	Windows	£2,100	HP	www.hp.com/uk	HP	0870 241 1485
An elegant portable for the power user, the OmniBook 6100 has a fast processor, 4-hour battery life, and wireless-ready case								
PowerBook G4	3.5	JUN 02	Mac	£2,199	Apple	www.apple.com/uk	Apple	0800 783 4846
G4 667MHz, 512MB RAM, 30GB hard drive, 15.2-inch screen, 2.4kg, and 5-hour battery life – but the competition has been busier								
Powerflex AQ1900D	4.5	MAR 02	Windows	£2,995	Evolution	www.evol.co.uk	Evolution	020 8544 0022
Despite its beigeness, the AQ1900D is a revelation, with two Athlon MP 1900+ chips, 1GB of 266MHz DDRAM, and a 36GB SCSI hard drive								
Power Mac Dual G4 1GHz	3.5	NOV 02	Mac	£1,699	Apple	www.apple.com/uk	Apple	0800 783 4846
A powerful improvement, but it pales in terms of power or value when compared to its high- and low-end siblings. Its architecture is good, though								
Precision M50	4.5	AUG 02	Windows	£2,110	Dell	www.dell.co.uk	Dell	0870 152 4699
A top mobile workstation for 3D work, video-editing, and games-playing that, while expensive, offers excellent value with its high specification								
Presario 2700EA	3.0	JUN 02	Windows	£1,799	Compaq	www.compaq.co.uk	Compaq	0845 270 4222
The low-spec components at the heart of the Presario let down an excellent design – wait for the Pentium 4-M version								
RH860HT	5.0	MAR 02	Windows	£2,649	Armari	www.armari.co.uk	Armari	020 8993 4111
An absolute corker of a system. It features two Intel Xeon 2.2GHz chips, DVD/CD-RW combo drive, and Soundblaster Audigy sound card								
Satellite 5105-S607	4.0	SEP 02	Windows	£1,600	Toshiba	www.toshiba.co.uk	Toshiba	0870 444 8944
A powerful and great-looking notebook with its eye firmly on the future – featuring a powerful chip and graphics card, media slots, and speakers								
Sovereign	4.0	JUN 02	Windows	£1,499	ACI	www.aci plc.co.uk	ACI	020 8357 1116
Cheaper than its rivals by a wide margin, ACI Sovereign can hold its own – although a desktop chip means this is a weighty and hot portable								
ThinkPad A31P	4.0	JUL 02	Windows	£2,484	IBM	www.ibm.com/uk	IBM	0800 015 7229
The top mobile workstation available, though it's let down by a pointer to control the cursor; plus, other Pentium 4-M units are on the way								
ThinkPad T23	4.0	JAN 02	Windows	£2,257	IBM	www.ibm.com/uk	IBM	0800 015 7229
If you want top-of-the-line specs, a lightweight model, and prefer trackpoints, the T23 is a great choice. It's expensive, though								
x4000	4.0	MAR 02	Windows	£3,329	HP	www.hp.com/uk	HP	0870 241 1485
A decent-enough machine boosted by a powerful ATI Fire GL4 graphics card. The rest of the spec is good, but won't set the world alight								

Digital cameras

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
Camedia 3020Zoom	3.5	APR 02	M W	£424.68	Olympus	www.olympus.co.uk	Olympus	0800 072 0070
A stripped-down, low-cost 3.1mp camera, the 3020Z has a fine optical zoom lens, a fair control set, and delivers good, clear image-quality								
Camedia E-20P	3.5	NOV 02	M W	£1,105	Olympus	www.olympus.co.uk	Olympus	020 7523 2772
A technical oddity: this 4.9mp SLR has no interchangeable lens, but can show a live preview. It's easy to use, and delivers good-quality images								
Coolpix 4500	4.5	OCT 02	M W	£509	Nikon	www.nikon.co.uk	Nikon	0800 230 220
Nikon's latest split-body Coolpix now sports a 4mp resolution, a smaller body, and revised controls. It provides a good feature set and image quality								
Coolpix 5700	5.0	NOV 02	M W	£757	Nikon	www.nikon.co.uk	Nikon	0800 230 220
Nikon has produced an excellent 5mp prosumer digital camera with an impressive 8x zoom lens – a vast improvement over the earlier Coolpix 5000								
Cyber-shot DSC-F707	4.5	APR 02	M W	£765.96	Sony	www.sony.co.uk	Sony	08705 111 999
A high-spec 5mp model with an excellent lens and controls, a noise-reduction feature, and an amazing infrared night-vision capability								

Cyber-shot DSC-P71	3.5	JUL 02	M W	£300	Sony	www.sony.co.uk	Sony	08705 111 999
Consider this camera if you're looking for a compact, solidly built point-&-shoot – and want to take a quick shot rather than fiddling with controls								
D1x	4.5	NOV 02	M W	£3,174	Nikon	www.nikon.co.uk	Nikon	0800 230 220
A 5.9mp SLR that delivers excellent-quality images. The interface is easy to use (two shutter buttons), and there are controls for nearly everything								
D100	4.0	NOV 02	M W	£1,494	Nikon	www.nikon.co.uk	Nikon	0800 230 220
A well-built 6mp SLR that delivers acceptable image quality. Its features are powerful and easy to use – a good camera at a tempting price								
DCS 760	5.0	NOV 02	M W	£3,994	Kodak Pro	www.kodak.com	DW	0870 444 0546
This 6.09mp SLR delivers image quality that must be seen to be believed. It's price may be high, but the high-end features more than compensate								
Digilux 1	4.0	AUG 02	M W	£680	Leica	leica-camera.com	Leica	01908 666 663
An excellent combination of a Leica camera body and Panasonic electronics, slightly let down by a lack of exposure lock, and low f-stop settings								
DX4900 Zoom	3.5	SEP 02	M W	£339	Kodak	www.kodak.co.uk	Kodak	0870 243 0270
One of the cheapest 4mp digital cameras. It has good capture-quality, but users lose out on most manual controls, and may find the lens sluggish								
Exilim EX-S2	3.5	NOV 02	M W	£255	Casio	www.exilim.co.uk	Casio	020 8450 9131
This fashionable thin, but pricey 2.1mp digital-still camera comes with some useful perks, including an LCD display, but resolution is a trifle low								
EOS D60	4.0	NOV 02	M W	£1,701	Canon	www.canon.co.uk	Canon	0121 680 8062
Excellent 6mp digital SLR camera with support for Canon lenses and accessories, and good bundled software – great value for money								
FinePix S2 Pro	4.5	NOV 02	M W	£1,445	Fujifilm	www.fujifilm.co.uk	Fujifilm	020 7586 1477
A solid 6.2mp digital SLR with a well thought-out interface. Image-quality is excellent, battery life is good, and the price isn't too high								
FinePix S304 Zoom	3.0	DEC 02	M W	£297.87	Fujifilm	www.fujifilm.co.uk	Fujifilm	020 7586 1477
A compact 3:1 digital camera with useful 1:1 zoom lens and Windows webcam ability, but rather basic controls. Notable for use of new xD format								
FinePix S602 Zoom	4.0	SEP 02	M W	£700	Fujifilm	www.fujifilm.co.uk	Fujifilm	020 7586 1477
Fujifilm's latest long-zoom digital camera features a full control set, quick reactions, and fast autofocus – ideal for action shooting								
Optio 430	3.0	APR 02	M W	£595.74	Pentax	www.pentax.co.uk	Pentax	01753 792 731
A stylish micro camera that, unfortunately, falls a little short on features and image quality – though it would be great for covert investigative work								
PDR-M25	3.5	JUN 02	M W	£249	Toshiba	www.toshiba.co.uk	Toshiba	0800 444 8944
Although it only has a 2mp CCD, this camera offers ease of use and a good 3x zoom lens at a low price – and its batteries can last over 200 shots								
PhotoPC 3100Z	4.0	APR 02	M W	£467.23	Epson UK	www.epson.co.uk	Epson UK	0800 220 546
Sporting an excellent lens for the price, the 3100Z delivers clear 3.15mp images, and the intuitive onscreen interface makes using it a piece of cake								
Photosmart 812	3.0	SEP 02	M W	£339	HP	www.hp.com	HP	0870 241 1485
A standard consumer-level camera that doesn't gain much from its 4mp CCD, and suffers from tricky controls. Colour reproduction was good, though								

Digital video cameras

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
AG-DVC200E	4.0	DEC 02	M W	£3,500	Panasonic	panasonic-broadcast.com	Panasonic	0118 902 9222
3x 1/2-inch CCDs; standard 1/2-inch Bayonet lens mount; 2x XLR audio inputs; 410,000-pixel effective CCD; 14x optical zoom; weighs up to 5kg								
DSR-250P	4.0	DEC 02	M W	£3,500	Sony BPE	www.sonybiz.net/uk	Sony BPE	01932 816 000
3x 1/3-inch CCDs; fixed 12x zoom lens; 'true' widescreen megapixel CCDs; 2x XLR audio inputs; 400,000-pixel effective CCDs; weighs 1.8kg								
DSR-PD150P	3.5	DEC 02	M W	£2,500	Sony BPE	www.sonybiz.net/uk	Sony BPE	01932 816 000
3x 1/3-inch CCDs; fixed 12x zoom lens; 2x XLR audio inputs; 400,000-pixel effective CCD; 0.44-inch viewfinder; weighs 1.8kg								
DSR-PDX10P	4.5	DEC 02	M W	£2,200	Sony BPE	www.sonybiz.net/uk	Sony BPE	01932 816 000
3x 0.21-inch CCDs; fixed 12x zoom lens 'true' widescreen megapixel CCDs; 2x XLR audio inputs; 690,000-pixel effective CCD; weighs 1.1kg								
GY-DV301E	3.5	DEC 02	M W	£2,200	JVC Pro	www.jvcpro.co.uk	JVC Pro	020 8896 6000
3x 1/3-inch CCDs; fixed 14x zoom lens; Streamcorder Web-streaming option; 0.44-inch viewfinder; 440,000-pixel effective CCD; weighs 1.4kg								
GY-DV5000E	4.5	DEC 02	M W	£3,800	JVC Pro	www.jvcpro.co.uk	JVC Pro	020 8896 6000
3x 1/3-inch CCDs; standard 1/2-inch Bayonet lens mount; Streamcorder Web-streaming option; 440,000-pixel CCD; 14x optical zoom; weighs 5.5kg								
XL1s	4.0	DEC 02	M W	£2,100	Canon	www.canon.co.uk	Canon	08705 143 723
3x 1/3-inch CCDs; XL1s proprietary lens mount; optional XLR audio output; 300,000-pixel effective CCD; 16x optical zoom; weighs around 2.9kg								
XM2	4.0	DEC 02	M W	£1,600	Canon	www.canon.co.uk	Canon	08705 143 723
3x 1/4-inch CCDs; fixed 20x zoom lens; optional XLR audio output; 440,000-pixel effective CCD; 0.7-inch viewfinder; weighs 1.1kg								

Storage

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
Baby CDRW	4.0	JUL 02	M W	£152	Amacom	amacom-tech.com	Amacom	020 8993 7373
Amacom's latest Baby CDRW is a great improvement on the previous version, and it's quicker than other 8x portable burners								
CRX 85U	4.5	JUL 02	M W	£225	Sony	sonyisstorage.com	Sony	00800 2623 7669
This DVD/CD-RW combo drive is the exception to the rule – it's quick when burning CD-RWs, but will also play DVDs no problem								
Devidene Superdrive	3.5	AUG 02	Mac	£399	Formac	www.formac.co.uk	Formac	020 8533 4040
A great-looking DVD-RW drive with fast write and re-write times – but slower read-speeds								
DRU120A	4.5	AUG 02	Windows	£280	Sony	sonyisstorage.com	Sony	00800 2623 7669
A fast DVD+R/RW drive with an extensive software bundle – at a low price								
DVD200i	3.5	AUG 02	Windows	£340	HP	www.hp.com/uk	HP	0870 241 1485
A speedy, solid-performing DVD+R/RW drive sadly let down by poor bundled software								
DVD-RW	4.0	AUG 02	M W	£369	LaCie	www.lacie.co.uk	LaCie	020 7872 8000
Available in both FireWire and USB 2.0 configurations, this DVD-RW drive is a solid performer in an attractive case. Basic software, though								
DVR A04	3.5	AUG 02	Windows	£350	Pioneer	pioneerdvdrw.co.uk	Pioneer	01753 789 789
This DVD-RW drive is faster and better than its predecessor – the A03 – with relatively cheap media compared to other drives								
EZ CDRW	4.0	JUL 02	M W	£155	Amacom	amacom-tech.com	Amacom	020 8993 7373
The drive may be stuck in a design time warp, but the EZ CDRW is a solid, speedy performer								
HighFly CDRW	4.5	JUL 02	Windows	£125	ONE Tech	www.one-tech.com	Cancom	0800 393 696
This is the fastest CD-RW drive we've seen – so if you need state-of-the-art performance, this is the way to go								
MP5125A-DP	4.0	AUG 02	Windows	£649	Ricoh	www.rocchmmc.com	Ricoh	0049 2116 5460
Features all the benefits of DVD+RW, bundled with good software, and is a fast performer to boot. A reliable unit								
NAS P405u	4.0	OCT 02	M W	£2,170	Iomega	iomega-europe.com	Iomega	020 7365 9527
Fast and efficient storage that's easy to install and administer, and works on most networks and operating systems. However, it isn't expandable								
PlexWriter S88TU	3.0	JUL 02	Windows	£219	Plextor	www.plextor.be	Cancom	0800 393 696
As one of the first drives to feature USB 2.0, the S88TU was a trailblazer, unfortunately it's now been left behind								
Pocket CDRW	4.5	JUL 02	M W	£199	LaCie	www.lacie.co.uk	LaCie	020 7872 8000
The Pocket CDRW hasn't changed much since its much-heralded launch last summer. Although there are faster drives, the overall concept is excellent								

DIGIT Best Buys



Fujifilm FinePix S2 Pro

This versatile 6.2mp digital SLR delivers great images, has plenty of storage options, and won't break the bank.



JVC Professional GY-DV5000E

Excellent image capture in both normal and low-light conditions, combined with an impressive full-auto mode and colour-balancing features make the DV5000 the top truly professional 4:3 camcorder available.



Sony BPE DSR-PDX10P

A true widescreen-capturing camcorder that delivers 16:9 footage of higher resolution than the 4:3 equivalent. Excellent optical lens stabilization and an XLR-audio output adaptor are two most welcome features.

TOP TEN DIGITAL CAMERAS

The most recently reviewed digital cameras to be awarded a Digit Best Buy logo are:



Canon EOS D60

Canon PowerShot G2

Canon PowerShot S10

Fujifilm FinePix S2 Pro

Kodak Professional DCS 760

Nikon Coolpix D1x

Nikon Coolpix 5700

Minolta Dimage 7

Olympus Camedia 3040Z

Sony Cyber-shot DSC-F707

DIGIT Best Buys

**Eizo FlexScan L685EX**

This 18-inch LCD monitor has the smallest bezel on the market, making it great for dual-display set-ups.

**Sony Multiscan X82**

The X82 boasts excellent picture-quality, great looks, and clear speakers. The three-mode zoom function delivers superior picture quality at lower resolutions.

**Epson Stylus Photo 2100**

Thanks to its seven-ink system, the Stylus Photo 2100 produces excellent prints. Even monochrome photographs look rich and clear.

TOP FOUR STORAGE

The most recently reviewed storage solutions to be awarded a Digit Best Buy logo are:



LaCie Pocket CDRW

One Technologies HighFly CDRW

Sony DRU120A

Sony CRX 85U

TOP FOUR MONITORS

The most recently reviewed monitors to be awarded a Digit Best Buy logo are:



Apple Cinema Display HD

Eizo FlexScan L675

LaCie Electron22blue III

Sony SDM-N80

TOP THREE PRINTERS

The most recently reviewed printers to be awarded a Digit Best Buy logo are:



Creo Iris iProof

Epson Stylus Photo 2100

HP Photosmart 1315

Portable II DVD+RW	3.0	AUG 02	Windows	£500	Freecom	www.freecom.co.uk	Freecom	0049 306 112 990
The first multiple-cable DVD burner – it supports USB 2.0, FireWire, PCMCIA, and more. Its speed comes at a high price, though								
Predator	3.0	JUL 02	Windows	£180	lomega	lomega-europe.com	lomega	020 7365 9527
The Predator looks great and, now that it has USB 2.0, it isn't let down by the transfer speeds of the previous version								
Traveller II	3.5	JUL 02	M W	£170	Freecom	www.freecom.com	Freecom	0049 306 112 990
Though expensive, the Traveller range consists of small, sleek, and option-rich CD, CR-RW, and DVD drives that are highly portable								
Zip 750MB	4.0	NOV 02	M W	£169.99	lomega	lomega-europe.com	lomega	020 7365 9527
This drive offers all the great features of previous models, with more capacity and faster speeds – but it's an expensive solution for most users								

Monitors

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
AS4636	4.0	JUN 02	M W	£699	Iiyama	www.iiyama.co.uk	Iiyama	01482 745 482
An inexpensive 18-inch LCD display that offers great colour reproduction and convenient connectors, though the controls are limited								
AU4831D	4.0	OCT 02	M W	£1,149	Iiyama	www.iiyama.co.uk	Iiyama	01482 745 482
This 19-inch display shows impressively high resolutions without trouble, and is good value. However, brightness and contrast are distinctly average								
Cinema Display	3.5	OCT 02	Mac	£1,779	Apple	www.apple.com/uk	Apple	0800 783 4846
The comparatively high price and low resolution of this 22-inch display makes it less of the attractive proposition it once was. In need of an update								
Cinema Display HD	4.0	OCT 02	Mac	£2,599	Apple	www.apple.com/uk	Apple	0800 783 4846
A competitor to dual-display set-ups. The OS-driven colour clarity is excellent, but the 23-inch screen isn't too bright, and the cost may prove prohibitive								
F180	3.0	OCT 02	M W	£1,174	SGI	www.sgi.co.uk	SGI	08702 432 243
Overpriced and underperforming, this 22-inch flat-panel is a disappointment. The specifications are low, and it has trouble with analog connections								
F220	2.5	OCT 02	M W	£3,098	SGI	www.sgi.co.uk	SGI	08702 432 243
The price of this 22-inch LCD display looks ludicrous next to the competition. While colour-reproduction is great, the poor viewing angle is a let down								
FlexScan FA-2091	4.0	OCT 02	Windows	£4,129	Eizo	www.eizo.co.uk	Eizo	01483 719 520
The highest-resolution monitor we've seen. Hugely expensive, but offers the same resolution as a 21- or 22-inch CRT. Offers great 2D performance								
FlexScan L685EX	4.5	OCT 02	M W	£1,089	Eizo	www.eizo.co.uk	Eizo	01483 719 520
With the smallest bezel on the market, the L685EX is great for dual-display set-ups. It has excellent features and software, but is quite pricey								
LT1820H	3.5	OCT 02	M W	£1,100	Sharp	www.sharp.co.uk	Sharp	0161 205 2333
This 18-inch LCD monitor has some great details that designers will warm to, but the average image quality and high price leave it out in the cold								
Multiscan X82	4.5	OCT 02	M W	£899	Sony	www.sony-cp.com	Sony	08705 111 999
The 18-inch LCD display that others have to measure up to. Exceptional picture-quality, great looks, good speakers, and loads of cool features								
MultiSync LCD1920NX	3.5	OCT 02	M W	£859	NEC-Mitsubishi	mitsubishi-monitors.com	NEC-Mitsubishi	020 7202 6300
It may cost less than some 18-inch flat-panels, but creatives would be better off spending more on a better screen. Disappointing								
Photon18blue	3.5	OCT 02	M W	£899	LaCie	www.lacie.co.uk	LaCie	020 7872 8000
This 18-inch flat-panel offers excellent colour accuracy, and is ideal for designers. It's rather expensive, though, and could do with an update								
VX900	4.0	OCT 02	M W	£849	Viewsonic	viewsonic-europe.com	Viewsonic	01293 643 900
A great-looking design, excellent speakers and good colour-calibration software make the VX900 19-inch flat-panel hard to beat								
XEN1810FS	3.0	OCT 02	M W	£869	Diamond Tech	diamondtechnology.com	Diamond Tech	01628 788 500
One of the best-looking 18-inch displays around, with a TV tuner, speakers, and remote control. Mediocre colour reproduction, though								

Printers

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
BJC-8500	3.5	DIGIT 50	M W	£1,850	Canon	www.canon.co.uk	Canon	0500 246 246
The list price of this printer is deceptive, as you'll have to pay an extra £850 more for the standard RIP software – ink cartridges are cheap but small								
Business Inkjet 2600DN	3.5	DIGIT 50	Windows	£1,476	HP	www.hp.co.uk	HP	0870 241 1485
This is technically an inkjet, although it has much in common with laser printers. It isn't great as a proofer, however								
Color Proofer 5000	4.0	DIGIT 50	M W	£4,121	Epson	www.epson.co.uk	Epson	08702 416 900
This is printer comes with an external hardware RIP – saving money if you don't have an old machine knocking about								
cp1700	4.0	FEB 02	M W	£277	HP	www.hp.co.uk	HP	0870 241 1485
A compact A3 colour inkjet that copes admirably with different types of stock, and offers fast, high-quality prints at a reasonable price								
DesignJet 10ps	4.0	JAN 02	M W	£708	HP	www.hp.co.uk	HP	0870 241 1485
To get the best from this inkjet, you'll need a fast CPU, but the quality output it offers may excuse the wait – and it's a snip at the price								
DesignJet 20ps	4.0	DIGIT 50	M W	£1,236	HP	www.hp.co.uk	HP	0870 241 1485
The 20ps is the 10ps (above) with a server-based RIP and a duplex unit. It's a great solution for cash-strapped design agencies								
DeskJet 995c	4.0	APR 02	M W	£282.55	HP	www.hp.co.uk	HP	0870 241 1485
If you want to join the Bluetooth revolution, take a look at the 995c. It offers a great combination of speed, ease, and great graphics – but at a price								
Iris iProof	4.5	DIGIT 50	M W	£4,121	Creo	www.creo.com	Creo	01923 470 500
This is a scaled down version of Creo's high-end proofers. It's expensive, but this printer includes high-end tools								
Magicolor 6110	4.5	JAN 02	M W	£2,995	Minolta-QMS	minolta-qms.co.uk	Minolta-QMS	01784 442 255
If paper size matters, and you've the space to accommodate it, the 6110 is an excellent colour laser printer								
Phaser 8200N	3.5	OCT 02	M W	£1,610	Xerox	www.xerox.com	Xerox	0870 241 3459
A fast, inexpensive colour printer that zips out colour documents – though it isn't great at text or high-end colour. A doddle to set up on a network								
Photosmart 1315	4.5	FEB 02	M W	£255	HP	www.hp.co.uk	HP	0870 241 1485
An A4 inkjet that can interface directly with a digital camera or memory card. It also offers paper-quality sensing and infrared for palmtops								
OptraColor 45n	4.0	DIGIT 50	M W	£1,020	Lexmark	www.lexmark.co.uk	Lexmark	01628 481 500
This machine tries to combine the best of inkjets and lasers – and succeeds. It comes with a firmware PostScript RIP								
S750	4.0	JUN 02	M W	£160	Canon	www.canon.co.uk	Canon	0500 246 246
Zippy and capable of delivering glossy colour photos on high-grade paper, the S750 is well worth a look								
S820	4.0	DIGIT 50	M W	£160	Canon	www.canon.co.uk	Canon	0500 246 246
A great printer for digital photography, it offers inexpensive and reliable six-colour printing, with each ink available in a separate tank								
S9000	4.0	DIGIT 50	M W	£382	Canon	www.canon.co.uk	Canon	0500 246 246
This is a photocopier through and through, but with some extra software makes a decent colour proofer								
S6300	4.0	FEB 02	M W	£322.55	Canon	www.canon.co.uk	Canon	0500 246 246
A four-colour, A3 inkjet that dispenses clear, vibrant results. It's fast and quiet, and offers great value for money								
Stylus Photo 2100	4.5	OCT 02	M W	£510	Epson	www.epson.co.uk	Epson	0800 220 546
As the first affordable seven-colour inkjet printer, this represents the state of inkjet art. Separate cartridges and a roll-paper cutter are great features								
Z53	3.5	FEB 02	M W	£130	Lexmark	www.lexmark.co.uk	Lexmark	01628 481 500
An A4 inkjet that, while offering good print quality, falls short in terms of speed and glitchy driver software								

Scanners

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
ArtixScan 2500f	4.0	JUN 02	M W	£3,049	Microtek	microtekeurope.com	Microtek	01908 317 797
Version f has improved hardware, and Microtek has upgraded the software – a classy A4 production scanner for pre-press professionals								
ArtixScan 4500t	4.0	MAY 02	M W	£2,700	Microtek	microtekeurope.com	Microtek	01908 317 797
Versatile, high-quality scanner for medium-format films, with the ability to take 35mm slides – expensive though								
CoolScan IV ED	4.0	MAY 02	M W	£550	Nikon	www.nikon.co.uk	Nikon	0800 230 220
Digital ICE Cubed technology means the CoolScan IV film scanner beats the old CoolScan 2000 and 4000 hands down								
Super CoolScan 4000 ED	5.0	MAY 02	M W	£1,100	Nikon	www.nikon.co.uk	Nikon	0800 230 220
The big-brother of the CoolScan 4000 ED, this is the best desktop 35mm film scanner on the market								
Canoscan FS4000US	4.5	MAY 02	M W	£595	Canon	www.canon.co.uk	Canon	08705 143 723
Has the finesse you'd expect from Canon's excellent cameras, but the scanner's software is a let down								
FilmScan 1800	3.5	MAY 02	M W	£170	Microtek	microtekeurope.com	Microtek	01908 317 797
A fine option for the budget-conscious – but with a resolution of only 1,800dpi, serious users need to look elsewhere								
PowerLook 270+	4.0	MAY 02	M W	£1,499	Umax	www.umax.co.uk	Umax	0870 906 4400
As Umax's first film scanner, the 270+ shows potential, but doesn't match the competition								
PowerLook 1120 Photo	3.5	DIGIT 50	M W	£849	Umax	www.umax.co.uk	Umax	0870 906 4400
Medium-resolution flatbed film/print scanner with a good software bundle, although the auto-exposure and calibration let it down								
ScanMaker 9800XL	4.0	AUG 02	M W	£1,275	Microtek	microtekeurope.com	Microtek	01908 317 797
A versatile and compact A3-format professional, pre-press flatbed scanner, suitable for workgroup sharing, and batch- and transparency-scanning								

3D graphics cards

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
Fire GL 8700	3.5	SEP 02	Windows	£215	ATI	www.ati.com	ATI	01628 477 788
Powered by a Radeon 8800 GPU and 64MB of DDR RAM, this card can run two VGA monitors – and it's perfectly capable of hard 3D graft								
Fire GL 8800	4.0	SEP 02	Windows	£425	ATI	www.ati.com	ATI	01628 477 788
A half-length card featuring one Radeon 8800 GPU, and 128MB of DDR RAM. Solid in LightWave tests, but a bit flaky when used with Maya								
Fire GL2	4.5	NOV 01	Windows	£833	ATI	www.ati.com	ATI	01628 477 788
Featuring 64MB DDR RAM, this card is very fast under Alias Wavefront Maya and NewTek LightWave – but there's a high price tag								
Optimus 8500	3.0	SEP 02	Windows	£170	Unitech	www.unitech-na.com	Watford	0870 200 0700
This card sports an ATI Radeon 8500 chip, 128MB of DDR RAM, and a 275MHz RAMDAC. More for gamers than high-end 3D artists								
Quadro4 200 NVS	4.0	SEP 02	Windows	£159	PNY	www.pny.com	PNY	01784 224 220
A third-length, half-height card with 64MB of SDRAM, and a cryptic high-density display connector. An ideal card for the budget-conscious 3D artist								
Quadro4 750 XGL	4.0	SEP 02	Windows	£605	PNY	www.pny.com	PNY	01784 224 220
This card sports 128MB of DDR RAM, and has one DVI and one VGA connector. A good performer, especially in Maya tests. Reliability could be improved								
Quadro4 900 XGL	4.0	SEP 02	Windows	£999	PNY	www.pny.com	PNY	01784 224 220
Slightly longer than half-length, this unit features 128MB of DDR RAM, and dual-DVI connectors for LCD monitors. A fast, good value performer								
Titanium Ti500	4.5	FEB 02	Windows	£297.02	3DPower	www.3dpower.co.uk	3DPower	0870 240 3331
A great value graphics card that outperforms many professional models, though there's a chance of problems with high-end software								
Wildcat VP970	4.5	SEP 02	Windows	£940	3DLabs	www.3dlabs.com	3DLabs	01784 470 555
A half-length, single-slot card featuring dual outputs (one DVI, one VGA), and a stereo-glasses connector. An excellent performer								
Wildcat III 6210	3.5	SEP 02	Windows	£1,835	3DLabs	www.3dlabs.com	3DLabs	01784 470 555
A full-length unit with four outputs. Features two GPUs, 256MB of DDR texture RAM, 128MB DDR frame buffer, and 32MB direct burst. Not too fast								

3D software

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
3DS Max 5.0	4.5	SEP 02	Windows	£2,695	Discreet	www.discreet.com	Discreet	020 7851 8000
A major update to one of the leading 3D applications. Rendering and dynamics are the stars, but it would have been nice to have caustics, too								
3D Toolkit	4.5	DEC 01	Mac	£161	dvGarage	www.dvgarage.com	CU	020 8358 5857
Worth it for the full version of Electric Image 2.9 alone. It's also the best way to start in professional 3D								
Axeledge	4.0	MAY 02	W M	£720	MindAvenue	mindavenue.com	CU	020 8358 5857
A powerful, yet simple and robust system for 3D Web-content development – but it's up against some established competition								
Bryce 5	4.5	SEP 01	M W	£199	Corel	www.corel.co.uk	CU	020 8358 5857
An excellent update that adds impressive tree-creation tools, full lighting controls, and unlimited network rendering								
Carrara Studio 2.0	5.0	AUG 02	M W	£299	Eovia	www.eovia.com	Softline	01883 745 112
The best entry-level 3D application bar none – a superb update that has an easy-to-use interface, and powerful tools. Excellent value for money								
Cinema 4D XL 7	4.5	AUG 01	Windows	£1,395	Maxon	www.cinema4d.com	HiSoft	01525 718 181
An excellent update that adds improved anti-aliasing, radiosity, and caustics – and brings its material handling up to scratch								
D Sculptor 2.0	4.0	JUN 02	Windows	£425	D Vision Works	www.d-vw.com	D Vision Works	01235 437 109
This is a great upgrade: it can now model undersides. It's now been split into the £425 Standard and the £850 Professional versions								
Deep3D	4.5	JUL 02	Windows	£595	Right Hemisphere	righthemisphere.com	Onevideo	0870 160 1770
The Deep3D system is a powerful 3D-painting tool that includes UV mapping and editing, but suffers from integration problems								
Houdini Select	3.5	JUN 02	Windows	£1,999	Side Effects	www.sidefx.com	Techimage	01376 253 868
Houdini Select's procedural workflow is a real boon, but the package as a whole loses out to some of its 3D competitors, such as Maya								
LightWave 7	4.5	NOV 01	M W	£1,449	NewTek	www.newtek.com	OneVideoNet	0870 160 1770
A worthy update with a focus on workflow and rendering speed, but new features such as fur-&-hair creation and fake radiosity impress								
Maya 4.5	4.0	SEP 02	M W L	£1,499	Alias Wavefront	aliaswavefront.com	Alias Wavefront	01494 441 273
There are few revelations here for most users, but the fluid dynamics are second to none – and the low price means Maya is now easier to approach								
Messiah:animate 3.0	4.0	OCT 02	W L	£670	pmG	projectmessiah.com	pmG	001 310 342 0077
A useful and flexible upgrade for the character animator, now working with Maya, 3DS Max, Cinema 4D, and LightWave								
Mover 4	4.0	NOV 02	M W	£81	E-on Software	e-onsoftware.com	E-on Software	0033 143 142 815
With Mover and Vue d'Esprit, a user has a strong animation suite. It's a bit mean not including these features as part of Vue d'Esprit, though								
Ozone 2	4.5	NOV 02	M W	£179	E-on Software	e-onsoftware.com	E-on Software	0033 143 142 815
Ozone places the atmospheric qualities of Vue d'Esprit into NewTek LightWave, delivering great animated exterior effects – including clouds – in 3D								
Pixels3D 4.0	4.0	MAY 02	M W	£149	Pixels3D	www.pixels3d.com	Pixels3D	Online
Much of Pixels 3D impresses – including the NURBS modeller – but it's let down by bugs and some unintuitive controls								

DIGIT Best Buys



Creo Iris iProof

This is a scaled down version of Creo's high-end proofers. It's expensive, but this printer includes high-end software.



Super CoolScan 4000 ED

This is the best of the 35mm film scanners, but it costs almost double its nearest rival. It has a maximum resolution of 4,000dpi and a dynamic range of 4.2D. It provides great quality 35mm scans.



3DLabs Wildcat VP970

This card offers exceptional performance. And the drivers offer some interesting possibilities, such as Quincunx anti-aliasing, and full 4x scene anti-aliasing.

TOP EIGHT 3D TOOLS

The most recently reviewed 3D-graphics tools to be awarded a Digit Best Buy logo are:

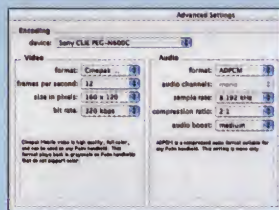
Alias|WaveFront Maya 4
Discreet 3DS Max 5
E-on Software Ozone 2
Eovia Carrara Studio 2.0
Maxon Cinema 4D XL 7
NewTek LightWave 7
Right Hemisphere Deep 3D
Softimage|XSI 2.0

TOP THREE 3D-GRAPHICS CARDS

The most recently reviewed 3D-graphics cards to be awarded a Digit Best Buy logo are:

Fire GL 8800
Quadro4 900 XGL
Titanium Ti5000

DIGIT Best Buys



Discreet Cleaner 6 for Mac

Discreet has put Cleaner back on the map once more. It's faster, more versatile, and supports all the latest technologies – a must-have upgrade for existing users.



Creative Labs Audigy 2

The Audigy 2 is a great solution for listening to audio in your digital-video projects. If you're working with six-channel stereo, this should be on your shopping list.



E-on Software Ozone 2

Bringing realistic atmospheric to LightWave, Ozone 2 is quick to set up, and produces stunning results – especially with landscapes generated in Vue d'Esprit.



The Foundry Tinderbox 3

A plug-in set that helps users create eye-catching film-style effects and Web footage – perfect for anyone familiar with Adobe After Effects.

TOP FIVE DIGITAL-VIDEO TOOLS

The most recently reviewed digital video tools to be awarded a Digit Best Buy logo are:

- Adobe After Effects 5.5
- Apple Final Cut Pro 3
- Creative Labs Audigy 2
- Discreet Cleaner 6 for Mac
- Tinderbox 3

Plasma	4.0	JUL 02	M W	£525	Discreet	www.discreet.com	Datatech 2000	0800 181 738
A great low-cost tool for Internet 3D-content creation, and it includes all the animation and rendering features you'll ever need								
SketchUp	4.0	NOV 02	M W	\$495	@Last Software	www.sketchup.com	@Last Software	001 303 245 0086
An ingenious program for quickly creating technical-looking designs without having to master CAD techniques. A clever toolset makes it easy								
SolidThinking 5.0 LT	3.5	OCT 02	M W	£345	Gestel/Evoque	solidthinking.com	CU	020 8358 5857
For those that want powerful NURBS and deformation control, SolidThinking is a versatile solution – but the learning curve is steep for rookies								
Swift 3D 3	4.0	DEC 02	M W	\$169	Electric Rain	www.erin.com	Electric Rain	001 303 543 8233
A quick and effective way for 2D designers to get into Web 3D. Sports a full feature set and many export formats, but there's no Shockwave export								
trueSpace 6	3.5	AUG 02	Windows	\$495	Caligari	www.caligari.com	Caligari	001 800 351 7620
At its price-point, trueSpace 6 offers lots of useful features – but they aren't well integrated, and the interface feels rather awkward to work with								
Universe 5	3.5	DEC 02	M W	£999	Electric Image	electricimage.com	CU	020 8358 5857
A solid modeller with strong animation and rendering. Now includes motion-tracking, but is up against programs coming down into its price range								
UZR 3D Pro	3.5	JUN 02	Windows	£316	UZR	www.uzr.de	UZR	49 404 1098 8900
Although it has a good tool set, this 3D scanning program can't mask out or force the use of small parts of photographs to make up a texture map								

Desktop publishing software

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
InDesign 2.0	5.0	MAR 02	M W	£550	Adobe	www.adobe.co.uk	Adobe	020 8606 4001
A truly sublime DTP tool that issues a wake-up call to page-layout designers. Simply the best layout application available								
ORIS Page 4.2	4.0	NOV 02	M W	£2,650	CGS	www.cgs.de	Colourbyte	01442 262 626
This versatile, if pricey, design and pre-press application combines layout, vector, retouching, and PDF tools with a wide range of output options								
PageMaker 7	4.0	OCT 01	M W	£405	Adobe	www.adobe.co.uk	Adobe	020 8606 4001
The original DTP program is revamped for the latest file formats and operating systems, plus sees the addition of a useful data-merge feature								
QuarkXPress 5.0	3.0	MAY 02	M W	£1,095	Quark	www.quark.co.uk	Quark	01483 445 566
An awful upgrade to a great DTP application, with limited Web tools, poor table support, and no printed manual. Wait for the next version								
QX-Tools Pro	4.0	JUL 02	M W	£169	Extensis	www.extensis.co.uk	CU	020 7358 5857
Highly useful collection of XTensions that squeeze extra productivity from DTP workhorse QuarkXPress by extending its capabilities								

Digital video

NAME	RATING	DATE	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
After Effects 5.5	4.5	FEB 02	M W	£499	Adobe	www.adobe.co.uk	Adobe	020 8606 4001
An update that fills version 5.0's gaps with more 3D workspace and Production Bundle-only features – plus a host of added extras								
Audigy 2	4.5	DEC 02	Windows	£107	Creative Labs	uk.europe.creative.com	Simply	0870 727 2100
If you work over six-channel audio and want to get the best approximation of how your work will sound, you can't go wrong with the Audigy 2								
Boris FX 6.0	4.0	MAR 02	M W	£375	Boris FX	www.boristfx.com	Polar Graphics	020 8868 2479
Boris is a powerful solution – producing complex and fully controllable 2D and 3D DVEs and transitions for professional-quality video								
Boris Graffiti 2	4.0	DIGIT 50	M W	£375	Boris FX	www.boristfx.com	Polar Graphics	020 8868 2479
More than just a character generator, Boris Graffiti 2 is a good titling solution, but more presets for common effects and jobs would be nice								
Casablanca Prestige	2.5	DEC 02	M W	£2,085	MacroSystem	macrosystem.de	Hama	01256 374 700
A simple, robust, non-PC-based editing system that will be too limited for most professionals. Costs as much as a full PC with real-time editing card								
ChromaFlex	4.0	DEC 02	M W	£995	Reflecmedia	reflecmedia.com	Reflecmedia	0161 217 0439
An excellent and flexible mobile solution to chroma-keying, though its size may prove limiting. Good value, considering the price of full studio hire								
Cleaner 6 for Mac	4.5	DEC 02	Mac	£470	Discreet	www.discreet.com	CU	020 8358 5857
Stirred into action by new rival, Canopus' ProCorder, Cleaner 6 boasts major speed improvements, support for new file formats, and Watch folders								
Combustion 2.0	4.5	MAY 02	M W	£3,845	Discreet	www.discreet.com	Discreet	020 7851 8000
An excellent upgrade that fills in version 1.0's gaps, turning Combustion into the best compositing tool in its class								
Continuum Complete 3	3.5	AUG 02	M W	£375	Boris FX	www.boristfx.com	Polar Graphics	020 8868 2479
A wide range of filters with some duplicates of built-in effects, and some very original tools – such as the ability to animate images in 3D								
DVD Studio Pro 1.5	4.0	JUL 02	Mac	£705	Apple	www.apple.com/uk	Apple	0800 783 4846
DVD Studio Pro is still an excellent, affordable and professional editing tool, but this upgrade feels like a rip-off								
Edition DV	4.5	DIGIT 50	Windows	£382	Pinnacle	pinnacle.sys.com	Pinnacle	01895 424 228
Edition DV's flexible, Combustion-like interface, combined with its powerful features, make it a worthy DIGIT best buy								
Final Cut Pro 3	4.5	MAR 02	Mac	£705.53	Apple	www.apple.com/uk	Apple	0800 783 4846
An important upgrade to an excellent product, though some new real-time editing features will appeal to more specialized users								
Matrix 1.0	3.5	FEB 02	Windows	£2,140	Chrome Imaging	chrome-imaging.com	Pixelution	01462 433 558
A powerful compositing tool at a low price, but its interface is clunky, and you need a high-spec machine to get it working properly								
Mokey V2	4.0	NOV 02	W L	£3,200	Imagineer	www.mokey.net	Imagineer	01483 685 585
It's expensive and specialized, but digital-video compositors who need to remove people, rigs, objects or backgrounds really can't go wrong here								
Multicam	4.0	JAN 02	M W	£449	United Media	unitedmediainc.com	365 Digital	0870 164 6365
If you work with synched multi-camera shoots, there's no quicker way of editing. An expensive option for low-end systems, though								
Premiere 6.5	4.0	OCT 02	M W	459	Adobe	www.adobe.co.uk	Adobe	020 8606 4001
Premiere's cross-platform DVD support is a mess, but this upgrade is rescued by its excellent titling tools and software-based real-time previewing								
ProCorder	4.0	OCT 02	Windows	£525	Canopus	canopus-uk.com	Canopus	020 7793 1188
Currently the best software-only video-transcoding tool. It's fast, intuitive for those with experience of Cleaner, and boasts nifty timesaving features								
RTX100	4.0	SEP 02	Windows	£765	Matrox	www.matrox.com	Matrox	01753 665 677
A great real-time editing system with some excellent automated tools and crisp effects output – but it has strong competition								
Tinderbox 3	4.5	AUG 02	M W	£395	The Foundry	thefoundry.co.uk	The Foundry	020 7434 0419
Another inspiring and genuinely useful combination of After Effects plug-ins – BadTV and OldFilm are great effects. AE users may find duplication								
Vegas Video 3	4.5	MAR 02	Windows	£139	Sonic Foundry	sonicfoundry.com	CU	020 8358 5857
A combination of advanced video- and audio-editing tools together with professional keyframeable effects – all with a real-time preview								
Video Toaster 2	4.5	DIGIT 50	Windows	£2,190	NewTek	videotoaster.com	OneVideo	0870 160 1770
Video Toaster is like nothing else available – a live production studio that sits within a high-spec PC. And, it costs only a few thousand pounds								
Xpress DV 3	4.5	JUN 02	M W	£1,300	Avid	www.avid.com	Avid	01753 655 999
The current leader of DV-editing pack, with a bright future ahead of it, Xpress DV 3 offers almost everything a desktop-video editor could want								

Graphic-design software

NAME	RATING	PLATFORM	REVIEWED	PRICE	COMPANY	URL	CONTACT	TELEPHONE
Cintiq 18X	4.5	SEP 02	M W	£2,895	Wacom	wacom-europe.com	CU	020 8358 5857
Stylish design combined with superb functionality – the Cintiq 18X is a joy to use, but the price may dissuade some from seeing it as essential kit								
Designer 9.0	3.0	NOV 01	Windows	£329	Corel	www.corel.com/uk	Corel	01483 747 526
No need to ditch Illustrator, FreeHand, or even CorelDraw – but Designer's precision tools make it a worthy alternative to technical-drawing software								
DreamSuite Series 2	3.5	DIGIT 50	M W	£95	Auto FX	www.autofx.com	Cadmium	0800 436 867
This small collection is worth the money for the film-frame effects alone, which is just as well as the rest range from cute to throwaway								
Eye Candy 4000	4.0	JAN 01	M W	£129	Alien Skin	www.alienskin.com	CU	020 8358 5857
Now easier to use, this handy collection of effects is more integrated with the host platform and comes with presets								
Essentials	4.5	MAR 01	M W	£59.95	Flaming Pear	flamingpear.com	Digital Workshop	01295 258 335
A great collection of filters that you'll either love or hate. If you need them, then this is one of the most tuned collections out there								
Expression 3	5.0	DEC 02	M W	£102.31	Creature House	creaturehouse.com	Creature House	008 522 697 8993
A clear improvement on an already strong version 2, putting Expression back at the forefront of vector-based painting for designers and illustrators								
Graphics Suite 11	4.0	OCT 02	M W	£340	Corel	www.corel.com	Corel	0800 581 028
Corel gets back on track with a single-box, dual-platform release that will please professional illustrators, designers, and non-coding Web creatives								
Illustrator 10	4.5	DEC 01	M W	£329	Adobe	www.adobe.co.uk	Adobe	020 8606 4000
This is an all-round excellent collection of new tools and functions with some powerful workflow improvements. Impressive								
KnockOut 2	4.5	JAN 02	M W	£242	Corel	www.procreate.com	CU	020 8358 5857
Reborn as a plug-in, with a raft of useful new features, KnockOut 2 makes light work of those near-impossible masking jobs								
KPT Effects	4.5	DEC 01	M W	£127.65	Corel	www.procreate.com	CU	020 8358 5857
Not everyone's bag, but if ink spots and lightning bolts get your creative cylinders firing, then KPT effects is a must-have purchase								
Photoshop 7.0	4.5	MAY 02	M W	£399	Adobe	www.adobe.co.uk	Adobe	020 8606 4001
There's more to this upgrade than support for Mac OS X – with great creative and repair tools, plus the new File Browser for managing images								
Studio Artist 2.0	4.5	APR 02	Mac	\$379	Synthetik	www.synthetik.com	Synthetik	001 866 511 9971
Studio Artist has leapt into the mainstream as the most powerful and mind-bendingly creative paint package the Macintosh has yet seen								

Multimedia software

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
D Joiner	4.5	JAN 02	M W	£300	D Vision Works	www.d-vw.com	D Vision Works	01235 437 109
Affordable, flexible, and easy-to-use stitcher for creating ultra-wide panoramic images, or interactive spherical views								
LiveStage Pro 4.0	4.0	DEC 02	M W	£635	Totally Hip	www.totallyhip.com	Computer Box	0161 374 0770
A powerful tool that can add a real sheen to multimedia projects. While not the most intuitive of applications, it's helped by powerful scripting tools								
Mediator 6 EXP	4.0	JUN 02	Windows	£649	Matchware	www.matchware.net	Matchware	020 8940 9700
Mediator 6 Pro's drag-&-drop visual programming tools are complemented by the practical scripting and support for ActiveX components								
SceneWeaver	4.0	OCT 02	M W	£299	RealViz	www.realviz.com	CU	020 8358 5857
An easy and effective way to place 3D objects into photographic scenes with correct perspective. SceneWeaver can also output navigable scenes								
Stitcher 3.5	4.5	SEP 02	M W	£350	RealViz	www.realviz.com	CU	020 8358 5857
A greatly improved multi-image stitcher for panoramas and interactive spherical images. Now runs under Mac OS X, and Windows								

Web-design software

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
Dreamweaver MX	5.0	JUL 02	M W	£299	Macromedia	macromedia.co.uk	CU	020 8358 5857
An indispensable tool matures providing greater control and extensibility – and the new interface allows easier migration to other products								
ColdFusion MX	4.0	DIGIT 50	M W	£799	Macromedia	macromedia.co.uk	CU	020 8358 5857
A powerful and accessible Web-application server that makes significant advances on previous versions, and will revolutionize Flash development								
Flash MX	4.5	MAY 02	M W	£369	Macromedia	macromedia.co.uk	CU	020 8358 5857
Flash MX is a step forward in the production of rich-media content for the Web. ActionScript creation and video integration make this a winner								
GoLive 6	4.5	APR 02	M W	£315	Adobe	www.adobe.co.uk	Adobe	020 8606 4001
A worthy update that brings GoLive back into the running as a professional Web-authoring tool – and it gives Dreamweaver a run for its money								
LIFT – NNG Edition	4.0	DEC 02	M W	\$549	UsableNet	www.usablenet.com	UsableNet	020 7900 2748
A powerful productivity aid for creating Web pages that are accessible to disabled users. Automatic page-scanning makes for quick error correction								
LiveMotion 2.0	4.0	APR 02	M W	£145	Adobe	www.adobe.co.uk	Adobe	020 8606 4001
Once just a friendlier alternative to Flash, LiveMotion has grown into a well-rounded design tool for serious multimedia work								
Maya RTA	4.5	APR 02	Windows	£695	Alias Wavefront	aliaswavefront.com	Alias Wavefront	01494 441 273
The easiest way for 3D designers to author interactive content for the Web – but you'll need to know Macromedia Director to get the best use of it								
NetObjects Fusion 7	2.5	DEC 02	M W	£120	Website Pros	websitepros.com	Redleaf Limited	023 8081 7700
A basic Web-design package for home and small-business use. An attractive proposition at the low price, but look elsewhere for high-end features								
Optimize!	3.5	OCT 02	Windows	£85	Ideaworks3D	ideaworks3d.com	Ideaworks3D	info@file-size.com
Useful kit for developers whose work targets low-bandwidth devices. Yields impressive results, but tends to be a little quirky and inflexible in use								
Toon Boom Studio 2	4.0	DIGIT 50	M W	£269	Toon Boom	toonboomstudio.com	Toon Boom	001 514 278 8666
A great tool for creating Web cartoons and animations with export support for Flash and QuickTime, and import support for Illustrator								
WireFusion 3	4.0	NOV 02	Windows	\$399	Demicron	www.demicron.com	Demicron	0046 845 486 950
3D modellers and those involved in video and traditional Web multimedia will find WireFusion 3 a breeze to bring their creations to life								

Utilities

NAME	RATING	REVIEWED	PLATFORM	PRICE	COMPANY	URL	CONTACT	TELEPHONE
FileMaker Pro 6	3.5	OCT 02	M W	£219	FileMaker	www.filemaker.co.uk	FileMaker	01628 534 158
FileMaker Pro 6 isn't a must-have upgrade, but it has many usable new features, such as XML support and search-&-replace								
Portfolio 6	4.5	JUN 02	M W	£129	Extensis	www.extensis.co.uk	CU	020 8358 5857
This very sophisticated asset manager has a great price, is scalable to a full enterprise-level server system, and has a tweaked interface								
PrintReady	4.0	DEC 02	M W	£250	Extensis	www.extensis.co.uk	CU	020 8358 5857
A fast, thorough, and customizable online preflight, perfect for those moving to a digital pre-press workflow. Automatic updates are a real bonus								

DIGIT Best Buys



Creature House Expression 3

Expression 3 leaves everything else in its wake. A fantastic addition to any illustrator's toolbox, it features a raft of new tools and features to enhance speed and creativity.



RealViz Stitcher 3.5

The best image-stitcher to date. Stitcher 3.5 is the first to give results that we're completely satisfied with for spherical panoramas.



Extensis Portfolio 6

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TOP THREE WEB TOOLS

The most recently reviewed Web tools to be awarded a Digit Best Buy logo are:



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Macromedia Dreamweaver MX
Macromedia Flash MX

TOP THREE MULTIMEDIA TOOLS

The most recently reviewed multimedia tools to be awarded a Digit Best Buy logo are:



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Realviz Stitcher 3.5

TOP FIVE GRAPHIC-DESIGN TOOLS

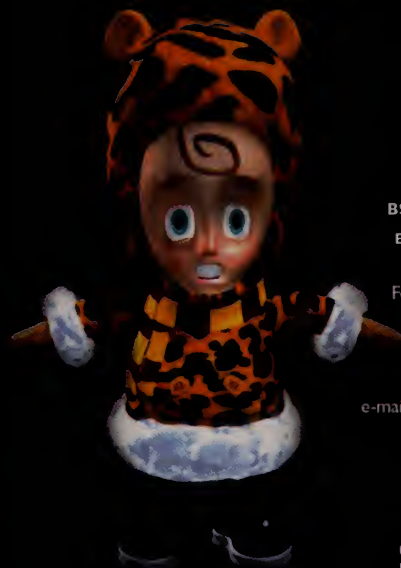
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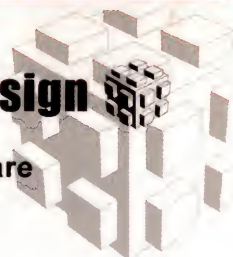
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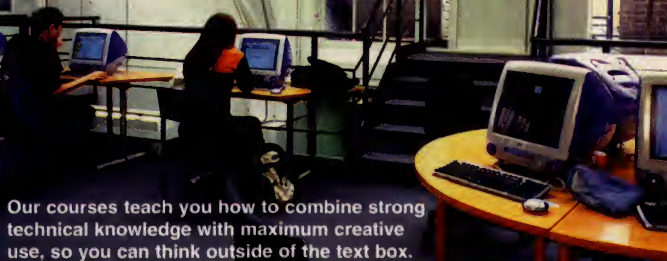
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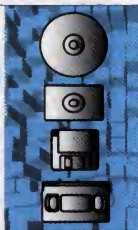
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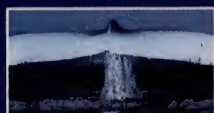


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Publisher Guy Eaton
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Managing editor (online) Gillian Thompson
Editor-in-chief Simon Jary

matthew@digitmag.co.uk
lynnw@digitmag.co.uk
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simonj@digitmag.co.uk

CONTRIBUTORS

Simon Danaher, Simon Eccles, John Butler, Richard Boardman, Mark Bennett, Karen Charlesworth, Christian Darkin, Clive Parker, Chris Rosser, Mark Towse

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2003: more silly gadgets on way

This year we finally saw the long-heralded Tablet PC go on sale. A year ago, I described the Tablet PC as a mere "wheeze" – although I did admit that it had been enhanced from a toboggan to a tea-tray in the 12 months since I'd seen it previously. At least we're seeing pie-in-the-sky at least reaching the oven. However half-baked the idea, it's encouraging that units are now available to buy. So of all the crazy stuff being hailed now, what will actually be created, or at least conceived, in 2003?

The death of the desktop creeps a little closer. Laptop processor power keeps doubling every couple of years, while disks continue to shrink and screens brighten up with the advent of organic LED displays. In its research labs, IBM is already playing with materials that within a few years will replace the heavy, inflexible glass substrate in those displays, making screens amazingly bendable. Mice will give way to touch-pads that respond to subtle hand movements. LCD displays will tilt, swivel, and change height with the touch of a finger to meet new ergonomic guidelines.

Digital cameras will continue shrinking with nearly every release. Casio's two-megapixel Exilim is close to the landmark credit-card size – but is nearly a half-inch thick. Also expect pocket-sized minicams from Sony, Minolta and Olympus. The trouble with ever-smaller cameras is our ever-fatter fingers. Boffins will be able to get a digital camera down to the size of a flea, but we'll have to evolve our hands to include pin-sized fingers to use them. Instead, as cameras shrink, they make their way into other devices, such as mobile phones.

Just because everyone's getting a digital camera doesn't mean the scanner is dead. In fact, as more of us create digital photo-albums, so we need to convert all our old fading snaps. Minolta's DiMage Scan Dual III uses a 16-bit converter to generate digital images, and features Pixel Polish software that automatically fixes underexposure and faded colours from conventional film and slides.

On top of digital photography, mobile phones will take on yet more PC functions. Samsung's latest, the snappily named SCH-X730, features a touch-sensitive screen and comes with a small stylus that enables you to jot down short text messages or draw simple diagrams. Samsung claims that handwriting-recognition in the phone allows users to send handwritten messages as conventional text. Pioneer's Happy Aqua Phone is a waterproof box in which you shut your mobile phone so you can use it in the bathroom. As making the box waterproof also makes it soundproof, there's a waterproof microphone and speaker built into the case.

Think Apple's iPod is cool? How about one that changes colour to match your mood, musical selection, or wardrobe. Bantam's BA800 features a semi-clear plastic case with electronics underneath that can match up to 20,000 colours. The BA800 also comes with a 1.8-inch colour screen for viewing digital photos, and has 256MB of built-in flash memory with an expandable SD slot. Toshiba's Hopbit is a PC-Card sized 5GB hard disk drive that hooks up with a Bluetooth transceiver, so you can access your data from your PDA, while your disk drive is in your pocket. And get ready for the remocon – a TV remote control with built-in 15-second voice recorder, intended for those times you're watching TV and something interesting flashes across the screen, but there's no pen and paper to hand.

What's the weirdest thing we can expect to see in 2003? This year saw the Segway transportation device, which is going to take some beating in the silly stakes – although to its credit it is, like the Tablet PC, actually on sale now. How about a jazzed-up, high-tech dentist chair instead of the standard swivel-chair, mock-wood desk, computer setup? Personal Computing Environments (PCE) reckons it's tomorrow's environment for work and gaming. The ergonomic combination chair-computer positions users with their feet up and their backs and arms supported with one or two flat-panel displays positioned at "just the right spot" and a keyboard that swings into place at "just the right height" and a little shelf for the mouse positioned "just so" to eliminate arm fatigue and repetitive strain. Jimmy Saville is bound to sue.



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[Toshiba's Hopbit is a PC-Card sized 5GB hard disk drive that hooks up with a Bluetooth transceiver, so you can access your data from your PDA, while your disk drive is in your pocket.]

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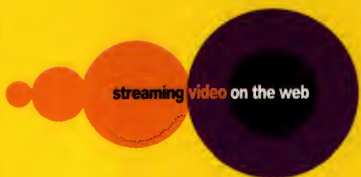


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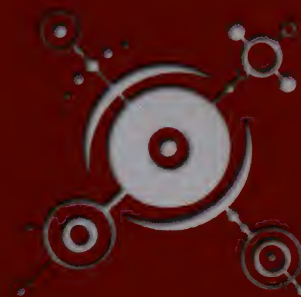
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